

**Final
Underground Storage Tank Closure
Assessment Report**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
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List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms.

Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK08, IT Corporation (IT) completed 25 underground storage tank (UST) closure assessments at Fort McClellan (FTMC) in Calhoun County, Alabama. The UST closure assessments were conducted to determine whether chemical constituents are present at the 25 UST sites and, if present, whether the concentrations would present an unacceptable risk to human health or the environment. The current environmental condition of each UST site was evaluated to determine if each associated property is suitable for transfer to the public domain, or whether chemical constituents are present at concentrations requiring further Army action prior to transfer. Site assessment work was conducted at 24 of the 25 UST sites. No field investigation work was conducted at Former Building 796, Parcel 43(7) based on an updated groundwater flow map and the review of previous closure activities at the site, which are believed to be sufficient for closure of the former UST. The UST closure assessments conducted at the remaining 24 UST sites consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, 35 permanent groundwater monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and provide site-specific geologic and hydrogeologic characterization information.

IT collected a total of 66 subsurface soil samples and 35 groundwater samples at the 24 UST sites. The analytical results indicate that benzene, toluene, ethylbenzene, total xylenes, polynuclear aromatic hydrocarbons (PAH), and lead were detected in the environmental media sampled. To evaluate whether the detected constituents present an unacceptable risk to human health or the environment, the analytical results were compared to site-specific screening levels (SSSL) for FTMC. The SSSLs were compiled for FTMC as part of the human health risk evaluations associated with site investigations being performed under the Base Realignment and Closure Environmental Restoration Program at FTMC. Lead results exceeding the SSSL were compared to media-specific background lead concentrations to determine if they were within naturally occurring background ranges.

Chemical constituent concentrations exceeded SSSLs in only one of the sixty-six subsurface soil samples collected. The concentration of the PAH benzo(a)pyrene exceeded the residential human health SSSL in one subsurface soil sample, collected at the Dental Clinic Building 1929, Parcel 49(7). However, benzo(a)pyrene was not detected in any of the other subsurface soil

samples or groundwater samples collected. Given the limited impacted area, benzo(a)pyrene is not expected to pose an unacceptable risk to human health in the residential land-use scenario. Naphthalene (one location) and lead (three locations) were detected in groundwater at concentrations exceeding residential human health SSSLs. The naphthalene concentration exceeded the residential human health SSSL in the groundwater sample collected at the Bivouac Area Building B-44, Parcel 38(7). However, naphthalene was not detected in any of the subsurface soil samples collected. Based on the limited impacted area and the future land use of the Bivouac Area Building B-44, Parcel 38(7), which is expected to remain with the Alabama Forestry Department, the potential impact to human receptors from naphthalene is expected to be minimal.

Lead concentrations exceeded the SSSL and were slightly above background values at three sites: Former Building 1201, Parcel 44(7) (one groundwater sample), Former Building 1202, Parcel 45(7) (one groundwater sample), and the Women's Army Corps Museum Building 1077, Parcel 167(7) (one groundwater sample). The remaining lead concentrations were below the SSSLs and within background concentrations or range of background values. The samples with the elevated lead concentrations were very turbid, and the analytical results may reflect the presence of lead associated with suspended particulates. Based on the limited impacted area and the future land use of the three sites, which are expected to remain with the Army National Guard or to be occupied as office space, the potential impact to human receptors is expected to be minimal. Given the limited impacted area, lead is not expected to pose an unacceptable risk to human health in the residential land-use scenario.

Based on the results of the UST closure assessments, past operations at the 25 UST sites do not appear to have adversely impacted the environment. The PAHs and lead detected in subsurface soil and groundwater do not pose an unacceptable risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends "No Further Action" and unrestricted land reuse at these parcels.

1.0 Introduction

The U.S. Army has selected Fort McClellan (FTMC), located in Calhoun County, Alabama, for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. The 1990 Base Closure Act, Public Law 101-510, established the process by which U.S. Department of Defense installations would be closed or realigned. The BRAC Environmental Restoration Program requires investigation and cleanup of federal properties prior to transfer to the public domain. The U.S. Army is conducting environmental studies of the impact of suspected contaminants at parcels at FTMC under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE contracted with IT Corporation (IT) to perform closure assessment activities for underground storage tanks (UST) at 25 sites, under Task Order CK08, Contract Number DACA21-96-D-0018. Four additional UST sites (Telephone Exchange Building 251, Parcel 3[7], Administrative Building 143, Parcel 37[7], Bowling Alley Building 1928, Parcel 48[7], and the Base Gasoline Station Building 2109, Parcels 21[7] and 22[7]) were originally scoped under Task Order CK08. However, with the exception of the Base Gasoline Station Building 2109, Parcels 21(7) and 22(7), these UST sites are located within the boundary of larger parcels and are addressed in separate site investigation (SI) reports. The UST at the Telephone Exchange Building 251, Parcel 3(7) is incorporated into the General Services Administration and Surrounding Warehouses, Parcel 151(7); the UST at the Administrative Building 143, Parcel 37(7) is incorporated into the SI for the Administrative Building 143, Parcel 138(7); and the UST at the Bowling Alley Building 1928, Parcel 48(7) is incorporated into the SI for Motor Pool Area 1800/1900, Parcel 145(7). The Base Gasoline Station Building 2109, Parcels 21(7) and 22(7), requires additional sample collection, and is addressed in a separate remedial investigation report. The 25 UST sites addressed in this report are described below with building and parcel numbers.

- Recreation Building 503, Parcel 9(7)
- Ammunition Supply Point, Building 4400, Parcel 31(7)
- Building S-55, Parcel 33(7)
- Fitness Center Building 128, Parcel 34(7)
- Field House Building 130, Parcel 35(7)
- Administrative Building 141, Parcel 36(7)
- Bivouac Area Building B-44, Parcel 38(7)
- Clothing Building 273, Parcel 39(7)
- Noble Army Hospital Building 292, Parcel 40(7)
- Building 796, Parcel 43(7)

- Building 1201, Parcel 44(7)
- Building 1202, Parcel 45(7)
- Dental Clinic Building 1929, Parcel 49(7)
- PX Building 1965, Parcel 50(7)
- Post Office Building 1966, Parcel 51(7)
- Barracks Building 3131, Parcel 54(7)
- Headquarters Building 3161, Parcel 55(7)
- Community Club Building 3212, Parcel 56(7)
- Recreation Center Building 3213, Parcel 57(7)
- Chapel Building 3293, Parcel 58(7)
- Building 162, Parcel 63(7)
- Women's Army Corps (WAC) Museum Building 1077, Parcel 167(7)
- Building 1338, Parcel 502(7)
- Building 3179, Parcel 505(7)
- Building 3691, Parcel 506(7).

Twenty-four of the twenty-five UST sites, all of which have USTs that were either replaced, removed, or closed in-place at FTMC, required additional sampling to verify current environmental conditions prior to transfer by the Army. No additional sampling was required at Former Building 796, Parcel 43(7), based on a November 29, 2000 decision by the Alabama Department of Environmental Management (ADEM). This report presents specific information and results compiled from the field investigation at each of the remaining twenty-four UST sites. The field investigation included direct-push subsurface soil sampling, monitoring well installation, and groundwater sampling activities. Based on the findings of the field investigation, the current environmental condition at each UST site was evaluated, and a recommendation was made for each.

2.0 Project Description

Twenty-four of twenty-five UST parcels where USTs were removed, replaced, or abandoned in-place at FTMC required additional sampling so that the Army may transfer these parcels to the public in accordance with the BRAC Environmental Restoration Program. In general, the twenty-five UST parcels were identified as Category 7 sites in the environmental baseline survey (EBS) (Environmental Science and Engineering, Inc. [ESE], 1988). Category 7 sites are areas that are not evaluated and/or require further evaluation.

A site-specific field sampling plan (SFSP) attachment and a site-specific safety and health plan (SSHP) attachment were finalized in September 1999. The SFSP and SSHP were prepared to provide technical guidance for sample collection and analysis at the 24 UST sites to be investigated. The SFSP was used in conjunction with the SSHP as attachments to the installation-wide work plan (IT, 1998), installation-wide sampling and analysis plan (SAP) (IT, 2000a), and UST summary report (IT, 1999a). The SAP includes the installation-wide safety and health plan and quality assurance plan.

The field investigation included the collection of 66 subsurface soil samples and 35 groundwater samples for chemical analyses. Analytical data from these samples were compared to site-specific screening levels (SSSL) to determine if chemical constituents are present in environmental media at concentrations requiring further investigation and/or remedial action by the Army prior to transfer.

3.0 Underground Storage Tank Closure Assessment Field Activities

The environmental sampling performed during the UST closure assessment field investigations included the collection of subsurface soil samples and groundwater samples for chemical analysis. ADEM provided recommendations for the 25 unevaluated USTs at FTMC. ADEM's recommendations were addressed using the UST summary report (IT, 1999a). Typically, a minimum of 3 subsurface soil samples (2 topographically downgradient and 1 topographically upgradient) and 1 groundwater sample (topographically downgradient) were collected at each site. However, based on ADEM's recommendations, some sites required additional samples while other sites required fewer samples. The sample locations were determined by observing site physical characteristics, reviewing historical documents pertaining to the use of the UST, reviewing the UST summary report, and following the recommendations made by ADEM. The sample locations, media, and rationale for each UST site are summarized in Chapter 6.0. Samples were submitted for laboratory analysis of petroleum-related compounds listed in Chapter 4.0.

During drilling and monitoring well installation activities, depth to groundwater was greater than 5 feet below the bottom of each UST, except at the USTs at the Dental Clinic Building 1929, Parcel 49(7) and the Community Club Building 3212, Parcel 56(7). Depth to groundwater at these two sites is most probably less than 5 feet below the bottom of the UST. Based on ADEM regulations, if groundwater is greater than 5 feet below the bottom of the UST, a groundwater sample is not required for chemical analysis. However, based on ADEM recommendations, a groundwater sample was collected downgradient of each UST.

3.1 Subsurface Soil Sampling

Subsurface soil samples were collected from 66 direct-push soil borings at 24 UST sites. Subsurface sampling locations and rationale are presented in Chapter 6.0. Subsurface soil sample designations, depths, and quality assurance/quality control (QA/QC) samples are listed in Appendix A. Soil boring sample locations were determined in the field by the site manager and on-site geologist based on the sampling rationale, site topography, buried underground utility lines, unexploded ordnance clearances, and actual field observations. IT contracted TEG, Inc., a direct-push technology subcontractor, to perform and assist in subsurface soil sample collection.

Subsurface soil samples were collected at depths greater than 1 foot below ground surface (bgs). The soil borings were advanced and soil samples collected using the direct-push sampling procedures specified in Section 4.9.11 of the (IT, 2000a). The samples were analyzed for the parameters listed in Appendix A using methods outlined in Chapter 4.0. Sample collection logs are included in Appendix B.

Soil samples were collected continuously from 1 foot bgs to the approximate bottom depth of the UST. The soil samples were field screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP to measure for volatile organic vapors above background (ambient air). Sample intervals were chosen based on the approximate depth of the bottom of the investigated UST. Where the approximate bottom of the UST was unknown, samples were collected at the interval showing the highest PID reading (above ambient air reading). If none of the samples collected indicated elevated PID readings above ambient air readings, the deepest soil sample interval collected (typically 12 feet bgs) was submitted to the laboratory for analysis.

One subsurface soil sample from each borehole was submitted to the laboratory for analysis. Samples submitted for laboratory analysis are summarized in Appendix A. The on-site geologist at each borehole constructed a detailed lithologic log. The lithologic log for each borehole is included in Appendix C.

At the completion of soil sampling, boreholes were abandoned with hydrated bentonite chips following borehole abandonment procedures summarized in Appendix B of the SAP (IT, 2000a). A minimum of 3 inches of grout was placed over the hydrated bentonite to seal each borehole.

3.2 Well Installation

Thirty-five permanent residuum monitoring wells were drilled and installed using hollow-stem augers at the twenty-four UST sites. Nineteen of the thirty-five permanent residuum monitoring wells were installed at direct-push soil boring locations. The rationale for the monitoring well locations are presented in Chapter 6.0. Monitoring well construction details of the permanent wells installed at the twenty-four UST sites are included in Table 3-1. The well construction logs are included in Appendix C.

IT contracted Miller Drilling, Inc., to install the permanent wells with a hollow-stem auger rig. The wells were installed following procedures outlined in Section 4.7 and Appendix C of the SAP (IT, 2000a). The boreholes at these locations were advanced with a 4.25-inch inside

diameter (ID) hollow-stem auger from ground surface to the first water-bearing zone in residuum at the well location. The borehole was augered to the depth of direct-push sampler refusal, and soil samples were collected at the depth of split-spoon refusal to the bottom of the borehole. A 2-foot long, 2-inch ID carbon steel split-spoon sampler was driven at 5-foot intervals to collect soil samples for observing and describing lithology. Where spoon refusal was encountered, the auger was advanced until the first water-bearing zone was encountered. The on-site geologist logging the auger borehole at each UST site continued the detailed lithologic log for each borehole from the depth of split-spoon sampler refusal to the bottom of the auger borehole. The lithologic log for each borehole is included in Appendix C.

Upon reaching the target depth, a 5- to 30-foot length of 2-inch ID, 0.010-inch factory slotted, Schedule 40 polyvinyl chloride (PVC) screen with a 3-inch PVC end cap was placed through the auger to the bottom of the borehole. The screen and end cap were attached to a 2-inch ID, flush-threaded Schedule 40 PVC riser. Number 1 sand was tremied around the well screen to at least 2 feet above the top of the screen as the auger was removed. Using a surge block, the permanent wells were surged for approximately 10 minutes, or until no more settling of the filter sand occurred within the borehole. A bentonite seal, consisting of approximately 2 feet of bentonite chips, was placed immediately on top of the filter sand and hydrated using potable water. A locking well cap was placed on top of the PVC riser pipe. The well was completed with a concrete surface pad measuring 3 feet by 3 feet by 4 inches.

The permanent wells were developed in accordance with methodology outlined in Section 4.8 and Appendix C of the SAP (IT, 2000a). The permanent wells were developed by surging with a surge block and pumping with a 2-inch, Model # 921 Whale submersible pump. Development was performed until the water turbidity was equal to or less than 20 nephelometric turbidity units or for a maximum of 8 hours. Well development logs are included in Appendix D.

3.3 Groundwater Level Measurements

The depth to groundwater was measured in the permanent wells installed at the UST sites following procedures outlined in Section 4.18 of the SAP (IT, 2000a). Depth to groundwater was measured with an electronic water level meter. The meter probe and cable were cleaned between use at each well, following decontamination procedures presented in Section 4.10 of the SAP. Measurements were referenced to the top of the PVC riser pipe. The groundwater elevations were calculated by measuring the depth to groundwater relative to the surveyed top-of-casing elevations. A summary of groundwater level measurements is presented in Table 3-2.

Static groundwater levels summarized in Table 3-2 for the 35 wells are at a shallower depth than depth to water level data from the drilling logs (Appendix C). This indicates that groundwater has an upward vertical hydraulic head.

3.4 Groundwater Sampling

Groundwater samples were collected from the 35 permanent residuum monitoring wells installed by IT. The groundwater sampling locations and rationale are presented in Chapter 6.0. The groundwater sample designations and QA/QC samples are listed in Appendix A.

Groundwater sampling was performed at the permanent well locations following procedures outlined in Section 4.9 of the SAP (IT, 2000a). Groundwater was sampled after a minimum of 3 well volumes were purged and after field parameters (temperature, pH, specific conductivity, oxidation-reduction potential, and turbidity) stabilized. Purging and sampling were performed using a submersible pump equipped with TeflonTM tubing. Teflon bailers were used to collect groundwater samples for benzene, toluene, ethylbenzene, and xylene (BTEX) analysis. Field measurements for pH, specific conductivity, oxidation-reduction potential, and temperature were recorded using a Horiba[®] U10 water quality meter. A turbidity meter was used to record turbidity measurements. Field parameter readings are listed in Table 3-3. Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Appendix A. Chapter 4.0 provides details of the sampling program.

3.5 Surveying of Sample Locations

Sample locations were surveyed using global positioning system survey techniques described in Section 4.3 of the (IT, 2000a), and conventional civil survey techniques described in Section 4.19 of the SAP. Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum, 1983. Elevations were referenced to the North American Vertical Datum of 1988. Horizontal coordinates and vertical elevations are included in Appendix E.

4.0 Analytical Program and Sample Preservation, Packaging, and Shipping

Samples collected at the UST sites were analyzed for the following parameters based on the history of site usage, as well as U.S. Environmental Protection Agency (EPA), ADEM, FTMC, and USACE requirements:

- | | |
|------------------------------------|---|
| • Diesel and heating oil UST sites | BTEX, polynuclear aromatic hydrocarbons (PAH), lead |
| • Gasoline UST sites | BTEX, PAHs, lead |
| • Gasoline and diesel UST sites | BTEX, PAHs, lead. |

The following are the analytical methods that were used for each parameter:

- BTEX – EPA Method 8021B
- Lead – EPA Method 6010B
- PAHs – EPA Method 8310.

The samples were analyzed using EPA SW-846 methods, including Update III methods where applicable, as presented in Table 6-1 in Appendix B of the SAP (IT, 2000a). Data were reported and evaluated in accordance with USACE–South Atlantic Savannah Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the installation-wide quality assurance plan). Chemical data was reported via hard copy data packages by the laboratory using Contract Laboratory Program-like forms along with electronic copies.

Sample preservation, packaging, and shipping followed the procedures specified in Section 4.13.2 of the SAP (IT, 2000a). Completed analysis request/chain-of-custody records were secured and included with each shipment of coolers to Quanterra Environmental Services in Knoxville, Tennessee. Split samples were shipped to USACE South Atlantic Division laboratory in Marietta, Georgia. Copies of the analysis request/chain-of-custody records are presented in Appendix B.

5.0 Investigation-Derived Waste Management and Disposal

Investigation-derived waste (IDW) was managed and disposed of as outlined in Appendix D of the SAP (IT, 2000a). The IDW generated during field activities at the UST sites was segregated as follows:

- Soil generated from drilling and monitoring well installation activities (drill cuttings)
- Purge water from well development and sampling activities, and decontamination fluids.

Solid IDW was stored inside the fenced area surrounding Building 335 and 336 in lined roll-off storage containers prior to characterization and final disposal. Solid IDW was characterized using toxicity characteristic leaching procedure (TCLP) analyses. Based on the analytical results, drill cuttings, and personal protective equipment generated during the UST closure assessment field investigations were disposed as nonregulated waste at the Industrial Landfill on the Main Post of FTMC.

Liquid IDW was containerized in the existing 20,000-gallon sump associated with the Building T-338 vehicle washrack. Liquid IDW was characterized by volatile organic compound, semivolatile organic compound, and metals analyses. Based on the analysis, liquid IDW was discharged as nonregulated waste to the wastewater treatment plant on the Main Post of FTMC.

6.0 Underground Storage Tank Closure Assessment Field Investigation Activities

The following sections describe the closure assessment field investigation at the 25 UST sites. The closure assessment field investigations included direct-push soil sampling, drilling and installation of permanent monitoring wells, development of monitoring wells, groundwater sampling, water level measurements, and surveying of sample locations. The 25 UST closure assessment sites are shown on Figure 6-1. A Basewide groundwater flow map is included as Figure 6-2.

6.1 Underground Storage Tank, Recreation Building 503, Parcel 9(7)

6.1.1 Site Description and Previous Investigations

Building 503 is known as the Recreation Building (Figure 6-3). Cave Creek is located approximately 100 feet east of the Recreational Building. This location had a 20,000-gallon heating oil tank, which was, closed in-place and replaced with another 20,000-gallon heating oil tank on May 13, 1994. The UST closure report prepared by Braun Intertec Corporation (Braun), the results of which can be obtained in the UST summary report (IT, 1999a), was reviewed and provided the following information. Approximately 25 feet of piping was capped at both ends and abandoned in-place. Three soil borings were installed, one on each accessible side of the UST, to a depth of 10 feet bgs (exact locations unknown). The interior of the tank was accessed and appeared to be in good condition. Soil samples were submitted for total petroleum hydrocarbon (TPH) and lead analyses. TPH concentrations of 10 parts per million (ppm) and lead concentrations of 24 ppm were documented. The depth of groundwater was determined to be greater than 20 feet bgs during the excavation for the newer tank. Product odor was not noted within the excavation and soils were not removed for disposal. The Braun closure report does not mention the disposition of the product piping. ADEM granted a “No Further Action” decision for this tank closure. The ADEM “No Further Action” letter can be found in Appendix E of the UST summary report (IT, 1999a).

6.1.2 Field Investigation Activities

6.1.2.1 Direct-Push Subsurface Soil Sampling

Three subsurface soil samples were collected for chemical analysis by Braun in 1994. Soil analytical data collected by Braun are presented in the UST summary report (IT, 1999a). Since Braun had already collected subsurface soil data, IT did not collect additional subsurface soil samples.

6.1.2.2 Monitoring Well Installation

One permanent well, UST-9-MW01, was installed in the residuum groundwater zone at the Recreation Building 503, Parcel 9(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-3. Table 3-1 summarizes construction details of the permanent well installed at Parcel 9(7). The well construction log is included in Appendix C.

6.1.2.3 Groundwater Sampling

The groundwater was sampled from the well installed at the well/groundwater sampling location shown on Figure 6-3. The groundwater sampling locations and rationale are listed in Table 6-1. The groundwater sample designations and QA/QC samples are listed in Appendix A.

6.1.3 Field Variances

There were no variances to the SFSP during completion of the UST closure assessment at the Recreation Building 503, Parcel 9(7). Any existing variances at other parcels are included in Appendix F.

6.1.4 Summary of Results

Based on hollow-stem auger drilling and split-spoon soil samples collected during the installation of monitoring well UST-9-MW01, sediments beneath the Recreation Building 503, Parcel 9(7) consist of predominantly thin silts and clays with some shale. Soils are firmer and develop sedimentary or bedding structures with depth, suggesting the occurrence of severely weathered shale. Severely weathered gray to black shale was encountered at approximately 9 feet bgs. Beneath the severely weathered gray shale is black weathered shale with quartz veins. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-9-MW01, groundwater was encountered at approximately 21 feet bgs. The static groundwater level was measured at permanent monitoring well UST-9-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-9-MW01 was at 2.34 feet bgs.

As shown on Figure 6-2, the groundwater flow direction at the site is to the north. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of groundwater samples collected at the Recreation Building 503, Parcel 9(7) indicate that BTEX, PAHs, and lead were not detected in the groundwater sample collected from monitoring well UST-9-MW01. Soils were field screened at 5 foot intervals using a PID during the drilling and installation of monitoring well UST-9-MW01 to the total depth of the well. PID readings were below background. Complete analytical results are presented in Appendix H.

6.1.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Recreation Building 503, Parcel 9(7) at FTMC, Calhoun County, Alabama (IT, 1999a). The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of groundwater samples collected from monitoring well UST-9-MW01. Monitoring well UST-9-MW01 was installed in the residuum groundwater zone to facilitate groundwater sample collection and provide site-specific geological information. The analytical results indicate that BTEX, lead, and PAHs were not detected in the groundwater. Because there were no detectable petroleum constituents present in groundwater, there does not appear to be a risk to either human health or the environment as a result of past usage of the UST at the Recreation Building 503, Parcel 9(7).

6.1.6 Recommendations

Although the site is projected for industrial reuse, screening soils and groundwater analytical results against the more conservative residential human health SSSLs indicate the potential threat to human health to be negligible in the residential scenario as well. This indicates the Army may release the property without restrictions. Based on the results of the UST closure assessment, the past operation of the UST at the Recreation Building 503, Parcel 9(7) does not appear to have adversely impacted the environment. Therefore, IT recommends the property is

suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Recreation Building 503, Parcel 9(7).

6.2 *Underground Storage Tank, Ammunition Supply Point, Building 4400, Parcel 31(7)*

6.2.1 *Site Description and Previous Investigations*

Building 4400 is in the Ammunition Supply Point (Figure 6-4). Building 4400 is in the approximate location of Former Building 4407. Section 5.1.1.3 of the EBS report contains contradictory and confusing information that indicates a 1,000-gallon No. 2 heating oil tank was removed from this location, and that a closure report was not on file (ESE, 1998). Table 6-1 of the EBS references a 1,000-gallon heating oil tank at the same location that was closed in-place in 1991. Table 5.1-2 of the EBS identifies a 1,000-gallon heating oil tank that was closed during 1994 without a closure report. IT was unable to reconcile this information during the file review, and could not identify these UST locations in the field. However, a closure report was reviewed for one 1,000-gallon diesel tank excavated and removed on September 7, 1994. The closure report, prepared by Charter South, Inc. is presented in Appendix A, Attachment 15 of the UST summary report (IT, 1999a). The closure report documents that a notable mild diesel odor was found during the excavation. Groundwater was determined to be at approximately 10 feet bgs. Soil samples were collected and analyzed from all four sides and bottom of the excavation. Upon excavation of the tank, pinholes were noted at both ends of the bottom of the tank. The excavation was not backfilled. The aboveground piping was removed. It appears from the report that the tank pit was overexcavated and resampled in an attempt to recover all soils containing over 100 ppm TPH. TPH concentrations of the excavated soils ranged from 347 to 2,480 ppm. Approximately 45 cubic yards (yd³) of contaminated soils were removed from the excavation and stockpiled for further disposition. The report notes that approval was pending for the soil to be disposed at the landfill. The report does not indicate which landfill the soil was disposed at FTMC.

6.2.2 Field Investigation Activities

6.2.2.1 Monitoring Well Installation

One permanent well, UST-31-MW01, was installed in the residuum groundwater zone at the Ammunition Supply Point Building 4400, Parcel 31(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-4. Table 3-1 summarizes construction details of the permanent well installed at Parcel 31(7). The well construction log is included in Appendix C.

6.2.2.2 Groundwater Sampling

The groundwater was sampled from monitoring well UST-31-MW01, as shown on Figure 6-4. The groundwater sampling location and rationale are listed in Table 6-2. The groundwater sample designation is listed in Appendix A.

6.2.3 Field Variances

There were no variances to the SFSP during completion of the UST closure assessment at the Ammunition Supply Building 4400, Parcel 31(7).

6.2.4 Summary of Results

Based on hollow-stem auger drilling and split-spoon soil samples collected during the installation of monitoring well UST-31-MW01, soil beneath the Ammunition Supply Point Building 4400, Parcel 31(7) consists of sand from ground surface to approximately 4 feet bgs, and overlies severely weathered brown to dark-gray shale to a depth of 29 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-31-MW01, groundwater was encountered at approximately 19 feet bgs. The static groundwater level measured in permanent monitoring well UST-31-MW01 on March 13, 2000 was 6.56 feet bgs. As shown on Figure 6-2, the groundwater flow at the site is to the northwest. Groundwater elevations are included in Appendix G.

The chemical analysis of the groundwater sample collected at the Ammunition Supply Point Building 4400, Parcel 31(7) indicate that BTEX, PAHs, and lead were not detected in the groundwater. Complete analytical results are presented in Appendix H.

6.2.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Ammunition Supply Point Building 4400, Parcel 31(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of a groundwater sample collected from monitoring well UST-31-MW01. In addition, soils were field screened using a PID at 5-foot intervals from ground surface to the total depth of the borehole during the installation of monitoring well UST-31-MW01. Monitoring well UST-31-MW01 was installed in the residuum groundwater zone to facilitate groundwater sample collection and provide site-specific geological characterization information. The analytical results indicate that BTEX, lead, and PAHs were not detected in the groundwater sample collected from monitoring well UST-31-MW01. Consequently, there does not appear to be a risk to either human health or the environment as a result of past usage of the UST at the Ammunition Supply Point Building 4400, Parcel 31(7).

6.2.6 Recommendations

Although the site is projected for industrial use, screening the groundwater analytical results against the more conservative residential human health SSSLs indicate the potential threat to human health to be negligible in the residential scenario as well. This indicates the Army may release the property without restriction. Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Ammunition Supply Point Building 4400, Parcel 31(7) does not appear to have adversely impacted the environment. Therefore, IT recommends that the property is suitable for transfer without any restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Ammunition Supply Point Building 4400, Parcel 31(7).

6.3 Underground Storage Tank, Former Building S-55, Parcel 33(7)

6.3.1 Site Description and Previous Investigations

Building S-55 has been demolished (Figure 6-5). This location formerly housed one 4,000-gallon heating oil UST, reportedly closed in 1991, though a closure report is not on file. IT has reviewed archived information related to the UST removal to determine the approximate location of the tank excavation. The tank was removed by IT on March 20, 1991. Six soil borings were drilled around the perimeter of the tank in December 1990. The preliminary analytical data indicated that TPH and total lead compounds existed within the subsurface soils (see the UST

summary report, Appendix D). During the tank excavation, soil samples were collected from the four walls and from the bottom center of the excavation. The samples were analyzed for TPH, total lead, TCLP lead, and BTEX (see the Table 1-3 of UST summary report [IT, 1999a]). Analytical results indicate that total lead concentrations ranged from 8.6 to 12 ppm, while TCLP lead concentrations were below the method detection limit. TPH was detected in two soil samples collected from the east and south walls of the excavation, at TPH concentrations of 170 and 140 ppm, respectively. BTEX concentrations were below detection limits. It appears, based on the field notes and analytical data, that some samples had TPH concentrations as high as 36,000 ppm TPH. In general, the analytical results indicate that a minimal amount of contaminated soil existed at this facility. Depth to groundwater was not referenced in the field notes reviewed.

6.3.2 Field Investigation Activities

6.3.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three soil borings at the Former Building S-55, Parcel 33(7), at the locations shown on Figure 6-5. Subsurface sampling locations and rationale are presented in Table 6-3. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations and QA/QC samples are listed in Appendix A.

6.3.2.2 Monitoring Well Installation

Three permanent wells (UST-33-MW01, UST-33-MW02, and UST-33-MW03) were installed in the residuum groundwater zone at the Former Building S-55, Parcel 33(7) to collect groundwater samples for chemical analysis. The well/groundwater locations are shown on Figure 6-5. Table 3-1 summarizes construction details of the permanent wells installed at Parcel 33(7). The well construction logs are included in Appendix C.

6.3.2.3 Groundwater Sampling

The groundwater was sampled from monitoring wells UST-33-MW01, UST-33-MW02, and UST-33-MW03 as shown on Figure 6-5. The groundwater sampling location and rationale are listed in Table 6-3. The groundwater sample designations and QA/QC samples are listed in Appendix A.

6.3.3 Field Variances

There were no variances to the SFSP during completion of the UST closure assessment at the Former Building S-55, Parcel 33(7).

6.3.4 Summary of Results

The subsurface investigation performed at the Former Building S-55, Parcel 33(7) provided soil screening and groundwater data to characterize the current environmental condition of the site and provide site-specific geologic information. This information was used to help determine the current environmental condition at the site.

Three borings were installed at the Former Building S-55, Parcel 33(7) to collect lithologic data and characterize the underlying geology. Total depth of the borings ranged from 59 to 92 feet bgs across the site. Based on this information, brown silt, sand, and clay are present from ground surface to an average depth of 14 feet bgs, and overlie predominantly weathered brown to gray shale to approximately 92 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the drilling and the installation of the three wells, groundwater was encountered at approximately 50 feet bgs across the site. Static groundwater levels were measured in permanent monitoring wells UST-33-MW01, UST-33-MW02, and UST-33-MW03 on March 13, 2000, following procedures outlined in Section 4.18 of the SAP (IT, 2000a). As shown on Figure 6-2, the groundwater flow at the site is to the northwest. Groundwater elevations are included in Appendix G.

The results of chemical analyses of the samples collected at the Former Building S-55, Parcel 33(7) indicate that toluene, ethylbenzene, total xylenes, and lead were detected in either subsurface soil samples or groundwater samples. To evaluate whether the analytical results present an unacceptable risk to human health and the environment, detected constituents were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-4 and 6-5 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected for chemical analysis at the Former Building S-55, Parcel 33(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-5. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-4. Subsurface soil samples were collected from 10 to 12 feet bgs at direct-push soil boring locations UST-33-MW02 and UST-33-MW03, and from 9 to 11 feet bgs at soil boring location UST-33-MW01. Toluene was detected in soil boring location UST-33-MW03 at a concentration of 0.0069 milligrams per kilogram (mg/kg). Ethylbenzene was detected at a concentration of 0.014 mg/kg at soil boring locations UST-33-MW02 and UST-33-MW03. Total xylenes were detected at all three soil boring locations, ranging in concentration from 0.014 mg/kg to 0.044 mg/kg. The highest concentration (0.044 mg/kg) was detected at soil boring location UST-33-MW02. Lead was detected in all three subsurface soil samples collected, ranging in concentration from 17.3 mg/kg to 26.1 mg/kg. The highest concentration was detected at soil boring location UST-33-MW03 at 26.1 mg/kg. Benzene and PAHs were not detected in any of the subsurface soil samples collected. The toluene, ethylbenzene, and total xylene concentrations detected in subsurface soil samples were below residential human health SSSLs. The lead concentrations were below the SSSL and the background concentrations.

Groundwater. As shown on Table 6-5, total xylenes were the only chemical constituents detected in groundwater samples collected at the Former Building S-55, Parcel 33(7). Total xylenes concentrations ranged from “not detected” in monitoring well UST-33-MW03 to 0.0045 milligrams per liter (mg/L) in monitoring well UST-33-MW01. The total xylenes concentrations were below the residential human health SSSLs.

6.3.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Former Building S-55, Parcel 33(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, three permanent monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and three groundwater samples during the UST closure assessment at the Former Building S-55, Parcel 33(7). The analytical results indicate that toluene, ethylbenzene, total xylenes, and lead were detected in the environmental media sampled. Analytical results were compared to the residential human health SSSLs. All analytical results were below SSSLs for FTMC.

6.3.6 Recommendations

Based on the results of the UST closure assessment, past operations of the UST at the Former Building S-55, Parcel 33(7) do not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment. Therefore, IT recommends that the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Former Building S-55, Parcel 33(7).

6.4 Underground Storage Tank, Fitness Center Building 128, Parcel 34(7)

6.4.1 Site Description and History

The Fitness Center (Building 128) had a 4,000-gallon heating oil UST, which was removed and replaced with another 4,000-gallon UST during 1996. Figure 6-6 shows the location of Parcel 34(7). The closure report prepared by Theta Engineering, Inc. (Theta), (presented in Appendix A, Attachment 16 of the UST summary report [IT, 1999a]) documented that a mild heating oil product odor was detected within the excavation. Examination of the removed tank revealed a hole on the northeast end of the tank bottom. The depth to groundwater was estimated to be approximately 12 feet bgs. The size of the tank removed, 5.5 by 24 feet, would put the bottom of this tank within 5 feet of the estimated groundwater depth. Soil samples were collected and field screened for organic vapors. Contaminated soils were excavated and stockpiled. Stockpiled soils were sampled and analyzed for TPH. Results from TPH analysis indicated concentrations of 854 ppm. Groundwater samples were not collected. Soils not exhibiting evidence of contamination were used to backfill the excavation. Approximately 16 yd³ of contaminated soils were stockpiled to await thermal volatilization.

Attached to the closure report was justification for not obtaining closure samples. The subject UST formerly contained heating oil for use at the tank location. Consequently, the UST was not regulated by ADEM. Theta prepared a value engineering change proposal (VECP) to guide

closure of nonregulated tanks. The VECP was submitted on December 1, 1995 and approved by the Base on February 22, 1996.

In accordance with the VECP, soil not exhibiting visual or olfactory evidence of contamination would be considered uncontaminated and could be used to backfill the tank excavation. Soil exhibiting visual and/or olfactory evidence of contamination was field screened using a PID. Soils exhibiting a PID reading of 20 ppm or less were considered uncontaminated. Waste characterization samples were collected from soils exhibiting evidence of contamination. UST closure samples were collected only if all soil exhibiting evidence of petroleum contamination was not overexcavated. Since all soil exhibiting evidence of petroleum contamination was overexcavated, no closure samples were collected.

6.4.2 Field Investigation Activities

6.4.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Fitness Center Building 128, Parcel 34(7) (Figure 6-6). Subsurface soil sampling locations and rationale are presented in Table 6-6. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.4.2.2 Monitoring Well Installation

One permanent well, UST-34-MW01, was installed in the residuum groundwater zone at the Fitness Center Building 128, Parcel 34(7), to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-6. Table 3-1 summarizes construction details of the permanent well installed at Parcel 34(7). The well construction log is included in Appendix C.

6.4.2.3 Groundwater Sampling

The groundwater was sampled from monitoring well UST-34-MW01, as shown on Figure 6-6. The groundwater sampling location and rationale are listed in Table 6-6. The groundwater sample designation is listed in Appendix A.

6.4.3 Field Variances

There was one variance to the SFSP during the UST closure assessment at the Fitness Center Building 128, Parcel 34(7). Permanent monitoring well UST-34-MW01 was moved approximately 40 feet northeast of its proposed location because buried underground utility lines were present. The variance report is included in Appendix F.

6.4.4 Summary of Results

The subsurface investigation performed at the Fitness Center Building 128, Parcel 34(7) provided soil and groundwater data to characterize the current environmental condition of the site and provide site-specific geologic information.

Three direct-push soil borings were advanced, and one permanent monitoring well was installed at the Fitness Center Building 128, Parcel 34(7) to collect lithologic data and characterize the underlying geology. The deepest boring was 24 feet bgs. Based on this information, silt and clay extend from ground surface to approximately 4 feet bgs and overlie predominantly clay and sand deposits to 24 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-34-MW01, groundwater was encountered at approximately 17 feet bgs. The static groundwater level was measured at permanent monitoring well UST-34-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-34-MW01 was 14.88 feet bgs. As shown on Figure 6-2, the groundwater flow at the site is to the northeast. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Fitness Center Building 128, Parcel 34(7) indicate that toluene, ethylbenzene, total xylenes, and lead were detected in subsurface soil samples. There were no chemical constituents detected in groundwater samples collected from monitoring well UST-34-MW01. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Table 6-7 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Ethylbenzene and total xylenes were detected in each of the subsurface soil samples collected. Ethylbenzene was detected at concentrations ranging from 0.012 mg/kg at UST-34-GP01 to 0.025 mg/kg at UST-34-GP02. Toluene was detected at a concentration of 0.0045 mg/kg at soil boring location UST-34-GP01 and 0.018 mg/kg at monitoring well UST-34-MW01. Total xylenes were detected at concentrations ranging from 0.017 mg/kg to 0.059 mg/kg. The highest concentration was detected at monitoring well UST-34-MW01 at 0.059 mg/kg. Lead was detected at each location at a concentration ranging from 4.4 mg/kg to 10.3 mg/kg. The highest concentration of lead was detected at soil boring location UST-34-MW01 at 10.3 mg/kg. Benzene and PAHs were not detected in any of the subsurface soil samples collected. The ethylbenzene, toluene, and total xylene concentrations were below SSSLs. The lead concentrations were below the SSSL and the background concentration.

6.4.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Fitness Center Building 128, Parcel 34(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Fitness Center Building 128, Parcel 34(7). The analytical results indicate that trace concentrations of toluene, ethylbenzene, total xylenes, and lead were detected in the environmental media sampled. Analytical results were compared to the residential human health SSSLs. All analytical results were below SSSLs for FTMC.

6.4.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operations of the UST at the Fitness Center Building 128, Parcel 34(7) do not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends that the property is suitable for transfer without restrictions

under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Fitness Center Building 128, Parcel 34(7).

6.5 Underground Storage Tank, Field House Building 130, Parcel 35(7)

6.5.1 Site Description and History

The Field House Building 130 (Figure 6-6) had a 2,500-gallon heating oil UST, which was removed and replaced with a 1,000-gallon UST in 1996. A closure report prepared by Theta was reviewed and is included in Appendix A, Attachment 17 of the UST summary report (IT, 1999a). Product odor was not detected within the excavation, and the removed tank appeared to be in good condition. The depth to groundwater was estimated to be approximately 10 feet bgs. Soil samples were collected and field screened for organic vapors. Groundwater samples were not collected. Evidence of contamination was not observed. Excavated soils were returned to the excavation upon completion of the closure activities. Attached to the closure report was a VECF for not obtaining closure samples (see Section 1.2.6 of the UST summary report [IT, 1999a]).

6.5.2 Field Investigation Activities

6.5.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Field House Building 130, Parcel 35(7), at the locations shown on Figure 6-7. Subsurface sampling locations and rationale are presented in Table 6-8. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.5.2.2 Monitoring Well Installation

One permanent well, UST-35-MW01, was installed in the residuum groundwater zone at the Field House Building 130, Parcel 35(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-7. Table 3-1 summarizes construction details of the permanent well installed at Parcel 35(7). The well construction log is included in Appendix C.

6.5.2.3 Groundwater Sampling

The groundwater was sampled from monitoring well UST-35-MW01, as shown on Figure 6-6. The groundwater sampling location and rationale are listed in Table 6-8. The groundwater sample designation is listed in Appendix A.

6.5.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the Field House Building 130, Parcel 35(7).

6.5.4 Summary of Results

The subsurface investigation performed at the Field House Building 130, Parcel 35(7) provided soil and groundwater data to characterize the current environmental condition of the site and provide site-specific geologic information.

Three direct-push soil borings were advanced and one permanent monitoring well was installed at the Field House Building 130, Parcel 35(7) to collect lithologic data and characterize the underlying geology. The total depth of the well was 11 feet bgs. Based on this information, silt, sand, and gravel extend from ground surface to approximately 8 feet bgs and overlie predominantly clay to the top of bedrock at 11 feet bgs. Bedrock was characterized as a shaley limestone at 11 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-35-MW01, bedrock was encountered at approximately 11 feet bgs, and groundwater was not present. However, the well was installed on top of bedrock at 11 feet bgs. The static groundwater level was measured at permanent monitoring well UST-35-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-35-MW01 was 7.76 feet bgs. As shown on Figure 6-2, the groundwater flow at the site is to the northeast. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Field House Building 130, Parcel 35(7) indicate that toluene, ethylbenzene, total xylenes, and lead were detected in subsurface soil samples. There were no chemical constituents detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC

Environmental Restoration Program at FTMC. The following sections and Table 6-9 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. As shown on Table 6-9, toluene, ethylbenzene, and total xylenes were detected in subsurface soil samples collected. Toluene concentrations ranged from 0.0053 mg/kg to 0.12 mg/kg, with the highest concentration detected at soil boring location UST-35-MW01. Ethylbenzene concentrations ranged from 0.013 mg/kg to 0.015 mg/kg, with the highest concentration detected at soil boring locations UST-35-GP01 and UST-35-GP02. Total xylene concentrations ranged from 0.024 mg/kg to 0.03 mg/kg, with the highest concentration detected at soil boring location UST-35-GP01. Lead was detected at concentrations ranging from 9.9 mg/kg to 14.4 mg/kg. The highest concentration (14.4 mg/kg) was detected at soil boring location UST-35-MW01. Benzene and PAHs were not detected in any of the subsurface soil samples collected. The ethylbenzene, toluene, and total xylene concentrations were below SSSLs. The lead results were below the SSSL and background concentration.

6.5.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Field House Building 130, Parcel 35(7), at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Field House Building 130, Parcel 35(7). The analytical results indicate that toluene, ethylbenzene, total xylenes, and lead were detected in the environmental media sampled. Analytical results were compared to the residential human health SSSLs. All analytical results were below SSSLs for FTMC.

6.5.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operations of the UST at the Field House Building 130, Parcel 35(7) do not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC restoration program, and “No Further Action” is required at the Field House Building 130, Parcel 35(7).

6.6 Underground Storage Tank, Administrative Building 141, Parcel 36(7)

6.6.1 Site Description and Previous Investigations

The Administrative Building 141 (Figure 6-8) had a 2,500-gallon heating oil UST, which was removed and replaced in 1996 with another 2,500-gallon UST. A closure report prepared by Theta was reviewed and is included in Appendix A, Attachment 18 of the UST summary report (IT, 1999a). Product odor was not detected within the excavation. The removed tank appeared to be in good condition. The depth to groundwater was estimated to be greater than 5 feet below the bottom of the excavation. This estimate was obtained from extending the excavation depth an additional 5 feet. Soil samples were collected and field screened for organic vapors. Groundwater samples were not collected. Evidence of contamination was not observed. Excavated soils were returned to the excavation upon completion of the closure activities. Attached to the closure report was a VECP for not obtaining closure samples (see Section 1.2.6 of the UST summary report [IT, 1999a]).

6.6.2 Field Investigation Activities

6.6.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Administrative Building 141, Parcel 36(7). The soil boring locations are shown on Figure 6-8. Subsurface soil sampling locations and rationale are presented in Table 6-10. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations and QA/QC samples are listed in Appendix A.

6.6.2.2 Monitoring Well Installation

One permanent well, UST-36-MW01, was installed in the residuum groundwater zone at the Administration Building 141, Parcel 36(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-8. Table 3-1 summarizes construction details of the permanent well installed at Parcel 36(7). The well construction log is included in Appendix C.

6.6.2.3 Groundwater Sampling

The groundwater was sampled from monitoring well UST-36-MW01, as shown on Figure 6-8. The groundwater sampling location and rationale are listed in Table 6-10. The groundwater sample designations are listed in Appendix A.

6.6.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the Administrative Building 141, Parcel 36(7).

6.6.4 Summary of Results

The subsurface investigation performed at the Administrative Building 141, Parcel 36(7), provided soil and groundwater data to characterize the current environmental condition of the site and provide site-specific geologic information. Three direct-push soil borings were advanced and one permanent monitoring well installed at the Administrative Building 141, Parcel 36(7) to collect lithologic data and characterize the underlying geology. The deepest boring was 29 feet bgs. Based on this information, brown clay extends from ground surface to approximately 15 feet bgs and overlies a yellowish-orange to light-gray platy, friable, weathered shale to 29 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-36-MW01, groundwater was encountered at approximately 19 feet bgs. The static groundwater level was measured at permanent monitoring well UST-36-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-36-MW01 was 12.18 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the southeast. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Administrative Building 141, Parcel 36(7) indicate that toluene, ethylbenzene, total xylenes, and lead were detected in subsurface soil samples. There were no chemical constituents detected in groundwater. To

evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Table 6-11 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. As shown on Table 6-11, toluene, ethylbenzene, and total xylenes were detected in each of the subsurface soil samples collected. Toluene concentrations ranged from 0.0059 mg/kg to 0.0067 mg/kg, with the highest concentration detected at soil boring location UST-36-GP01. Ethylbenzene concentrations ranged from 0.013 mg/kg to 0.017 mg/kg, with the highest concentration detected at soil boring location UST-36-MW01. Total xylene concentrations ranged from 0.024 mg/kg to 0.026 mg/kg, with the highest concentration detected at soil boring location UST-36-GP01. Lead was detected in each of the subsurface soil samples at concentrations ranging from 16.5 mg/kg to 22.7 mg/kg. The highest concentration (22.7 mg/kg) was detected at soil boring location UST-36-GP01. Benzene and PAHs were not detected in any of the subsurface soil samples collected. The ethylbenzene, toluene, and total xylene concentrations were below SSSLs. The lead concentrations were below the SSSL and the background concentrations.

6.6.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Administrative Building 141, Parcel 36(7), at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Administrative Building 141, Parcel 36(7). The analytical results indicate that toluene, ethylbenzene, total xylenes, and lead were detected in the environmental media sampled. Analytical results were compared to the residential human health SSSLs. All analytical results were below the SSSLs for FTMC.

6.6.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Administrative Building 141, Parcel 36(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Administrative Building 141, Parcel 36(7)

6.7 Underground Storage Tank, Bivouac Area Building B-44, Parcel 38(7)

6.7.1 Site Description and Previous Investigations

The Bivouac Area Building B-44 (Figure 6-9) had a 1,000-gallon heating oil UST, which was removed in 1996. A closure report prepared by Theta was reviewed and is included in Appendix A, Attachment 20 of the UST summary report (IT, 1999a). Product odor was not detected within the excavation. The removed tank appeared to be in good condition. The depth to groundwater was estimated to be greater than 5 feet below the bottom of the tank. This estimate was obtained from extending the excavation depth an additional 5 feet. Soil samples were collected and field screened. Groundwater samples were not collected. Evidence of contamination was not observed. Excavated soils were returned to the excavation upon completion of closure activities. Attached to this closure report was a VECF for not obtaining closure samples (see Section 1.2.6).

6.7.2 Field Investigation Activities

6.7.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Bivouac Area Building B-44, Parcel 38(7). The soil boring locations are shown on Figure 6-9. Subsurface soil sampling locations and rationale are presented in Table 6-12. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations and QA/QC samples are listed in Appendix A.

6.7.2.2 Monitoring Well Installation

One permanent well, UST-38-MW01, was installed in the residuum groundwater zone at the Bivouac Area Building B-44, Parcel 38(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-9. Table 3-1 summarizes construction details of the permanent well installed at Parcel 38(7). The well construction log is included in Appendix C.

6.7.2.3 Groundwater Sampling

The groundwater was sampled from monitoring well UST-38-MW01, shown on Figure 6-9. The groundwater sampling location and rationale are listed in Table 6-12. The groundwater sample designation is listed in Appendix A.

6.7.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the Bivouac Area Building B-44, Parcel 38(7).

6.7.4 Summary of Results

The subsurface investigation performed at the Bivouac Area Building B-44, Parcel 38(7) provided soil and groundwater data to characterize the current environmental condition of the site and provide site-specific geologic information. Three direct-push soil borings were advanced and one permanent monitoring well was installed at the Bivouac Area Building B-44, Parcel 38(7) to collect lithologic data and characterize the underlying geology. The deepest boring was 30 feet bgs. Based on this information, brown silt with some clay and fine-grain sand extends from ground surface to approximately 30 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-38-MW01, groundwater was encountered at approximately 23 feet bgs. The static groundwater level was measured at permanent monitoring well UST-38-MW01 on February 21, 2000. Static groundwater measured in monitoring well UST-38-MW01 was 13.89 feet bgs. Groundwater elevation data for this portion of FTMC is inadequate to construct flow data and therefore, this site is not represented on Figure 6-2. However, based on surface topography, groundwater flow at the site is likely to be toward the north.

The results of the chemical analysis of samples collected at the Bivouac Area Building B-44, Parcel 38(7) indicate that benzene, ethylbenzene, total xylenes, and lead were detected in

subsurface soil samples. Naphthalene was detected in the groundwater sample. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-13 and 6-14 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. As shown on Table 6-13, benzene was detected at soil boring location UST-38-GP02 at a concentration of 0.014 mg/kg. Ethylbenzene was detected in each of the samples at concentrations ranging from 0.013 mg/kg to 0.017 mg/kg. The highest concentration (0.017 mg/kg) was detected at soil boring location UST-38-GP02. Total xylenes were detected in each of the samples at concentrations ranging from 0.020 mg/kg to 0.021 mg/kg. The highest concentration (0.021 mg/kg) was detected at soil boring locations UST-38-MW01 and UST-38-GP02. Lead was detected in each of the samples at concentrations ranging from 4.2 mg/kg to 15.2 mg/kg. The highest concentration (15.2 mg/kg) was detected at soil boring location UST-38-GP01. PAHs were not detected in any of the subsurface soil samples collected. The benzene, ethylbenzene, and total xylene concentrations were below SSSLs. The lead results were below the SSSL and the background concentration.

Groundwater. Naphthalene was detected in the groundwater sample collected from monitoring well UST-38-MW01 at a concentration of 0.066 mg/L. The naphthalene concentration exceeded the residential human health SSSL for FTMC.

6.7.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Bivouac Area Building B-44, Parcel 38(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Bivouac Area Building B-44, Parcel 38(7). The analytical results indicate that benzene, ethylbenzene, total xylenes, and lead were detected in the subsurface soil samples and naphthalene was detected in the groundwater sample. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. With the exception of naphthalene in groundwater, the analytical results were below SSSLs.

Although naphthalene was detected in the groundwater at a concentration exceeding the residential human health SSSLs, the potential impact to human health is expected to be minimal. This conclusion is based on the low level of contamination and the future land use of the Bivouac Area Building B-44, which is expected to remain with the Alabama Forestry Department.

6.7.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Bivouac Area, Building B-44, Parcel 38(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents detected in site media, including naphthalene and lead, do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Bivouac Area, Building B-44, Parcel 38(7).

6.8 Underground Storage Tank, Former Clothing Building 273, Parcel 39(7)

6.8.1 Site Description and Previous Investigations

Building 273 has been demolished but was formerly known as the Clothing Building (Figure 6-10). The EBS documents that a 1,000-gallon heating oil UST was removed in 1991 and that a closure report was not on file. The tank was removed by IT on April 7, 1991. Six soil borings were advanced and soil samples collected for analysis in December 1990. The soil analytical results indicated that leakage from the UST had impacted the subsurface soils (see the UST Summary Report, Appendix D[IT, 1999a]). Following the tank removal, soil samples were collected from the excavation and analyzed for TPH, total lead, TCLP lead, and BTEX (see the UST Summary, Appendix D [IT, 1999a]). Analytical results indicate that total lead

concentrations ranged from 14 to 40 ppm, while TCLP lead results were below detection limit. TPH concentrations ranged from nondetected to 160 ppm. A sample from the bottom of the excavation was not collected. The depth to groundwater was not referenced in the field notes reviewed.

6.8.2 Field Investigation Activities

6.8.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Former Clothing Building 273, Parcel 39(7). The soil boring locations are shown on Figure 6-10. Subsurface soil sampling locations and rationale are presented in Table 6-15. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.8.2.2 Monitoring Well Installation

Three permanent wells (UST-39-MW01, UST-39-MW02, and UST-39-MW03) were installed in the residuum groundwater zone at the Former Clothing Building 273, Parcel 39(7) to collect groundwater samples for chemical analysis. The well/groundwater sample locations are shown on Figure 6-10. Table 3-1 summarizes construction details of the permanent monitoring wells installed at Parcel 39(7). The well construction logs are included in Appendix C.

6.8.2.3 Groundwater Sampling

The groundwater was sampled from monitoring wells UST-39-MW01, UST-39-MW02, and UST-39-MW03, as shown on Figure 6-10. The groundwater sampling locations and rationale are listed in Table 6-15. The groundwater sample designations are listed in Appendix A.

6.8.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the Former Clothing Building 273, Parcel 39(7).

6.8.4 Summary of Results

Three direct-push soil borings were advanced and three permanent monitoring wells were installed at the Former Clothing Building, Parcel 39(7) to collect lithologic data and characterize the underlying geology. Depths ranged from 30 to 34 feet bgs across the site. Based on this information, light brown soft silt and clay is present from ground surface to an average depth of 8 feet bgs and overlies predominantly weathered blue-gray to gray, dry, fissile, platy shale and siltstone to approximately 34 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

The static groundwater levels were measured in the three permanent wells (UST-39-MW01, UST-39-MW02, and UST-39-MW03) at the Former Clothing Building 273, Parcel 39(7) on March 13, 2000, following procedures outlined in Section 4.18 of the SAP (IT, 2000a). Groundwater was encountered from approximately 23 to 28 feet bgs across the site. As shown on Figure 6-2, groundwater flow at the site is to the south. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Former Clothing Building 273, Parcel 39(7) indicate that BTEX and lead were detected in subsurface soil samples. Toluene was detected in one groundwater sample. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-16 and 6-17 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected for chemical analysis at the Former Clothing Building 273, Parcel 39(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-10. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-16.

Subsurface soil samples were collected from 10 feet to 12 feet bgs at direct-push soil boring locations UST-39-GP01, UST-39-GP02, and UST-39-GP03. Benzene was detected at a concentration of 0.0065 mg/kg at soil boring location UST-39-GP02. Toluene was detected at a concentration of 0.0071 mg/kg at soil boring location UST-39-GP01. Ethylbenzene was

detected in subsurface soil samples collected from soil boring locations UST-39-GP02 and UST-39-GP01, at concentrations of 0.012 mg/kg and 0.014 mg/kg, respectively. Total xylenes were detected in each of the subsurface soil samples collected, ranging in concentration from 0.016 mg/kg to 0.019 mg/kg. The highest concentration (0.019 mg/kg) was detected at soil boring location UST-39-GP01.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 11.9 mg/kg to 18.0 mg/kg. The highest concentration (18.0 mg/kg) was detected at soil boring location UST-39-GP01. PAHs were not detected in any of the subsurface soil samples collected. BTEX concentrations were below SSSLs. Lead concentrations were below the SSSL and the background concentration.

Groundwater. Toluene (0.00038 mg/L) was detected in the groundwater sample collected from monitoring well UST-39-MW01, at a concentration below the SSSL.

6.8.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Former Clothing Building 273, Parcel 39(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, three permanent monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and three groundwater samples during the UST closure assessment at the Former Clothing Building 273, Parcel 39(7). The analytical results indicate that BTEX and lead were detected in the subsurface soil samples and toluene was detected in the groundwater sample. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. All analytical results were below the SSSLs for FTMC.

6.8.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Former Clothing Building 273, Parcel 39(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead detected in site media do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program and “No Further Action” is required at the Former Clothing Building 273, Parcel 39(7).

6.9 Underground Storage Tank, Noble Army Hospital Building 292, Parcel 40(7)

6.9.1 Site Description and Previous Investigations

Building 292 is known as the Noble Army Hospital (Figure 6-11). Tables 5.1-2 and 6-1 of the EBS reference the facility as having one 8,000-gallon heating oil tank, which was removed and replaced in 1996 (ESE, 1998). The list of active USTs track this tank(s) under Building 292. A closure report prepared by Theta was reviewed and is included in Appendix A, Attachment 21 of the UST summary report (IT, 1999a). The closure report references the removal and replacement of one 8,000-gallon heating oil UST for Building 292. A diesel fuel odor was detected during this tank removal. Groundwater was determined to be greater than 5 feet below the base of the tank. This estimate was determined by extending the depth of the excavation an additional 5 feet. Upon the tank removal, a 1-foot (in length) hole was noted on the top west end of the tank. The product piping was purged of product, capped, and left in-place. Soils exhibiting evidence of contamination were segregated from uncontaminated soils and stockpiled for treatment by thermal volatilization; however, there is no record of the disposal in the closure report. The excavated soils (approximately 492 yd³) were sampled and analyzed for TPH. TPH concentrations were detected at 528 ppm. Soil samples collected for TPH analysis during closure assessment activities ranged from 56 ppm to 4,850 ppm. Groundwater sampling was not performed. The closure report contains a site map that references the location, depth, and TPH concentrations of the samples collected. In general, the eastern and southern sides of the tank exhibited TPH concentrations greater than 1,000 ppm. Based on the closure report, it appears that the vertical and horizontal extent of petroleum contamination has not been defined.

6.9.2 Field Investigation Activities

6.9.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Noble Army Hospital Building 292, Parcel 40(7). The soil boring locations are shown on Figure 6-11.

Subsurface soil sampling locations and rationale are presented in Table 6-18. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface sample designations and QA/QC sample quantities are listed in Appendix A.

6.9.2.2 Monitoring Well Installation

One permanent well, UST-40-MW01, was installed in the residuum groundwater zone at the Noble Army Hospital Building 292, Parcel 40(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-11. Table 3-1 summarizes construction details of the permanent well installed at Parcel 40(7). The well construction log is included in Appendix C.

6.9.2.3 Groundwater Sampling

The groundwater was sampled from monitoring well UST-40-MW01, as shown on Figure 6-11. The groundwater sampling location and rationale are listed in Table 6-18. The groundwater sample designation listed in Appendix A.

6.9.3 Field Variances

There were no variances to the SFSP during the completion of the UST closure assessment at the Noble Army Hospital Building 292, Parcel 40(7).

6.9.4 Summary of Results

Three direct-push soil borings were advanced and one permanent monitoring well installed at the Noble Army Hospital Building 292, Parcel 40(7) to collect lithologic data and characterize the underlying geology. Based on this information, brown silt and clay are present from ground surface to approximately 8 feet bgs and overlie yellowish-orange to gray weathered shale to approximately 29 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-40-MW01, groundwater was not present and hollow-stem auger refusal was encountered at 29 feet bgs; therefore, the well was installed at that depth. The static groundwater level was measured at permanent monitoring well UST-40-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-40-MW01

was 22.87 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the west. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Noble Army Hospital Building 292, Parcel 40(7) indicate that BTEX and lead were detected in subsurface soil samples. There were no chemical constituents detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Table 6-19 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected for chemical analysis at the Noble Army Hospital Building 292, Parcel 40(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-11. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-19.

Subsurface soil samples were collected from 7 feet to 8 feet bgs at direct-push soil boring locations UST-40-GP01, UST-40-GP02, and UST-40-MW01. Benzene was detected at a concentration of 0.013 mg/kg at soil boring location UST-40-MW01. Ethylbenzene was detected in subsurface soil samples collected from soil boring locations UST-40-GP02 and UST-40-MW01, at concentrations of 0.017 mg/kg and 0.013 mg/kg, respectively. Toluene was detected at all three soil boring locations, ranging in concentration from 0.0053 mg/kg to 0.0064 mg/kg. The highest concentration (0.0064 mg/kg) was detected at soil boring location UST-40-MW01. Total xylenes were detected at all three soil boring locations, ranging in concentration from 0.018 mg/kg to 0.031 mg/kg. The highest concentration (0.031 mg/kg) was detected at soil boring location UST-40-GP02.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 11.9 mg/kg to 13.6 mg/kg. The highest concentration (13.6 mg/kg) was detected at soil boring location UST-40-MW01. PAHs were not detected in any of the subsurface soil samples collected. BTEX concentrations were below SSSLs. The lead results were below the SSSL and the background concentration.

6.9.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Noble Army Hospital Building 292, Parcel 40(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Noble Army Hospital Building 292, Parcel 40(7). The analytical results indicate that BTEX and lead were detected in the subsurface soil. There were no chemical constituents detected in the groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. All analytical results were below the SSSLs for FTMC.

6.9.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Noble Army Hospital, Parcel 40(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead detected in subsurface soil samples do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC restoration program, and “No Further Action” is required at the Noble Army Hospital Building 292, Parcel 40(7).

6.10 Underground Storage Tank, Former Building 796, Parcel 43(7)

6.10.1 Site Description and Previous Investigations

The EBS (ESE, 1998) indicated that the UST at Parcel 43(7) was associated with Building 796, which is located along 2nd Avenue of FTMC. However, based on conversations with Lee Jaye of FTMC Transition Team, the actual location of the UST at Parcel 43(7) is approximately 1,000 feet to the northeast. There is a concrete slab, approximately 70 feet by 25 feet, located along 1st Avenue of FTMC. The UST was located to the southeast of the slab, as shown on Figure 6-12. This location was formerly associated with a 1,000-gallon heating oil UST. The tank was removed in February 1996. A closure report prepared by Theta was reviewed and is included in Appendix A, Attachment 24 of the UST summary report (IT, 1999a). The closure report documented that a mild product odor was detected within the excavation. An examination of the removed tank noted that the tank was in good condition. The depth to groundwater was estimated to be greater than 5 feet below the base of the excavation. This depth was determined by topographical features. Soil samples were collected and field screened for organic vapors. Contaminated soils were excavated and stockpiled. Stockpiled soils were sampled and analyzed for TPH. Analytical results indicate TPH concentrations of 193 ppm. Groundwater samples were not collected. Soils not exhibiting evidence of contamination were used to backfill the excavation. Approximately 21 yd³ of contaminated soils were stockpiled to await treatment/disposal. Attached to this closure report was a VECP for not obtaining closure samples (see Section 1.2.6).

6.10.2 Field Investigation Activities

There were no field investigation activities conducted at Former Building 796, Parcel 43(7). Although originally identified as a site requiring further evaluation, it is IT's recommendation that no additional field investigation is necessary. This recommendation is based on the previous closure activities at the site and review of the updated Basewide groundwater flow map (Figure 6-2).

6.10.3 Conclusions

IT, at the request of USACE and ADEM, did not perform any additional assessment work at the Former Building 796, Parcel 43(7). This decision was based partly on the soil analytical results of the sample collected by Theta in 1996. During tank removal activities, Theta encountered petroleum-impacted soil. The soil was excavated, sampled, and stockpiled for disposal. The analytical results of the soil sample indicated the presence of TPH at concentrations below the

SSSLs for FTMC. In addition, the depth to groundwater in the vicinity of the former UST is estimated to be greater than 5 feet below the bottom of the tank pit, making a groundwater sample not required according to ADEM regulations. Based on the results of the previous UST removal and investigation, it is believed that petroleum-related chemicals do not exist at the site in concentrations high enough to require further action.

6.10.4 Recommendations

Based on the results of the previously reported removal activities, the past operations of the UST at the Former Building 796, Parcel 43(7) do not appear to have adversely impacted the environment. All soils exhibiting evidence of petroleum contamination were excavated and stockpiled for disposal. Any trace concentrations of petroleum constituents remaining in site media do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Former Building 796, Parcel 43(7).

6.11 Underground Storage Tank, Former Building 1201, Parcel 44(7)

6.11.1 Site Description and Previous Investigations

Building 1201, which has been demolished (Figure 6-13), was formerly associated with a 1,000-gallon heating oil UST. A closure report prepared by Theta was reviewed and is included in Appendix A, Attachment 25 of the UST summary report (IT, 1999a). The closure report references the removal of one 1,000-gallon UST in February 1996. A mild diesel fuel odor was detected during tank removal. Groundwater was determined to be greater than 5 feet below the base of the tank. This depth to water was estimated by extending the depth of the excavation an additional 5 feet. The tank appeared to be in good condition upon removal. Soils exhibiting evidence of contamination were segregated from uncontaminated soils and stockpiled. The excavated contaminated soils (approximately 26.4 yd³) were sampled and analyzed for TPH. Analytical results indicate TPH concentrations were detected at 250 ppm. Soil samples collected and analyzed during closure assessment activities had TPH concentrations ranging from 20 ppm to 13,000 ppm. Groundwater sampling was not performed. The closure report contains a site map that references the location, depth, and TPH concentrations of the samples collected. In general, only the eastern and western walls of the excavation were sampled and analyzed. The samples collected from the west wall contained the highest concentration. Attached to this closure report was a VECF for not obtaining closure samples (see Section 1.2.6).

6.11.2 Field Investigation Activities

6.11.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Former Building 1201, Parcel 44(7), at the locations shown on Figure 6-13. Subsurface soil sampling locations and rationale are presented in Table 6-20. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.11.2.2 Monitoring Well Installation

Three permanent wells (UST-44-MW01, UST-44-MW02, and UST-44-MW03) were installed in the residuum groundwater zone at the Former Building 1201, Parcel 44(7) to collect groundwater samples for chemical analysis. The well/groundwater sample locations are shown on Figure 6-13. Table 3-1 summarizes construction details of the permanent wells installed at Parcel 44(7). The well construction logs are included in Appendix C.

6.11.2.3 Groundwater Sampling

The groundwater was sampled from monitoring wells UST-44-MW01, UST-44-MW02, and UST-44-MW03, as shown on Figure 6-13. The groundwater sampling locations and rationale are listed in Table 6-20. The groundwater sample designations and QA/QC sample quantities are listed in Appendix A.

6.11.3 Field Variances

There were no variances to the SFSP during completion of the UST closure assessment at the Former Building 1201, Parcel 44(7).

6.11.4 Summary of Results

Three direct-push soil borings were advanced and three permanent monitoring wells were installed at the Former Building 1201, Parcel 44(7) to collect lithologic data and characterize the underlying geology. Total depth of the wells ranged from 35 to 44.5 feet bgs across the site. Based on this information, a red to brownish-red to yellowish-brown, dense, stiff clay with silt and sand extends from ground surface to approximately 44.5 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

The static groundwater levels were measured in the three permanent wells (UST-44-MW01, UST-44-MW02, and UST-44-MW03) at the Former Building 1201, Parcel 44(7) on March 13, 2000 following procedures outlined in Section 4.18 of the SAP (IT, 2000a). Groundwater was encountered from approximately 30.5 feet to 34 feet bgs across the site. As shown on Figure 6-2, groundwater flow at the site is to the northeast. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Former Building 1201, Parcel 44(7) indicate that ethylbenzene, toluene, total xylenes, lead, and PAHs were detected in subsurface soil samples. Lead was detected in two of the groundwater samples. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. Lead results exceeding SSSLs were compared to media-specific background concentrations (Science Applications International Corporation [SAIC], 1998). The following sections and Tables 6-21 and 6-22 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected for chemical analysis at the Former Building 1201, Parcel 44(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-13. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-21.

Subsurface soil samples were collected from 10 feet to 12 feet bgs at direct-push soil boring locations UST-44-GP01, UST-44-GP02, and UST-44-GP03. Toluene was detected in subsurface soil samples collected from soil boring locations UST-44-GP01 and UST-44-GP02, at concentrations of 0.0075 mg/kg and 0.010 mg/kg, respectively. Ethylbenzene was detected at all three soil boring locations at concentrations ranging from 0.021 mg/kg to 0.046 mg/kg. The highest concentration (0.046 mg/kg) was detected at soil boring location UST-44-GP01. Total xylenes were detected at all three soil boring locations at concentrations ranging from 0.036 mg/kg to 0.14 mg/kg. The highest concentration (0.14 mg/kg) was detected at soil boring location UST-44-GP01.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 18.1 mg/kg to 25.7 mg/kg. The highest concentration of lead (25.7 mg/kg) was detected at soil boring location UST-43-GP03.

Nine PAHs were detected in the subsurface soil samples collected. PAHs were detected at soil boring locations UST-44-GP01 and UST-44-GP02. The detected concentrations ranged from 0.0034 mg/kg to 0.021 mg/kg, with the highest concentration being detected at UST-44-GP01. No PAHs were detected in the subsurface soil sample collected from soil boring location UST-44-GP03. BTEX and PAH concentrations were below SSSLs. Lead concentrations were below the SSSL and background concentrations.

Groundwater. Lead was detected in the groundwater samples collected from monitoring wells UST-44-MW01 and UST-44-MW02 at concentrations of 0.0136 mg/L and 0.0454 mg/L, respectively (Table 6-22). The lead concentrations (0.0136 mg/L and 0.0454 mg/L) exceeded background at both locations. In addition, lead exceeded the SSSL at monitoring well location UST-44-MW02. Lead was not detected in the groundwater sample collected from monitoring well UST-44-MW03.

6.11.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Former Building 1201, Parcel 44(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, three permanent monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and three groundwater samples during the UST closure assessment at the Former Building 1201, Parcel 44(7). The analytical results indicate that toluene, ethylbenzene, total xylenes, lead, and PAHs were detected in the subsurface soil and lead was detected in the groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at

FTMC. Lead results exceeding SSSLs were compared to media-specific background lead concentrations to determine if they were within naturally occurring ranges (SAIC, 1998).

BTEX compounds, PAHs, and lead were detected in site media. With the exception of lead in one groundwater sample, the analytical results were below the SSSLs. The lead concentration (0.0454 mg/L) exceeded the residential human health SSSL in the groundwater sample collected from monitoring well location UST-44-MW02. As shown in purge records (Table 3-3 and Appendix D), the samples from UST-44-MW01 and UST-44-MW02 had a markedly higher turbidity than the sample from UST-44-MW03 at the time of sample collection. IT has documented the effect of high turbidity on metals concentrations in groundwater (IT, 2000b). IT resampled five wells that previously had high turbidity using a “low-flow” groundwater purging and sampling technique to reduce turbidity to below 10 nephelometric turbidity units. The resampling effort demonstrated that the concentrations of most metals in the lower turbidity sample were significantly lower (1 to 2 orders of magnitude) than in the higher turbidity samples. Consequently, the elevated lead results in the groundwater samples collected at the Former Building 1201, Parcel 44(7) are likely the result of high turbidity.

6.11.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Former Building 1201, Parcel 44(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead detected in site media do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC restoration program, and “No Further Action” is required at the Former Building 1201, Parcel 44(7).

6.12 Underground Storage Tank, Former Building 1202, Parcel 45(7)

6.12.1 Site Description and Previous Investigations

Building 1202, which has been demolished (Figure 6-14), formerly had a 1,000-gallon heating oil UST associated with it. The tank was removed in February 1996. A closure report prepared by Theta was reviewed and is included in Appendix A, Attachment 26 of the UST summary report (IT, 1999a). The closure report documented that a mild product odor was detected within the excavation. Examination of the removed tank revealed that the tank was in good condition. The depth to groundwater was estimated to be greater than 5 feet below the base of the excavation. This depth was determined by topographical features. Soil samples were collected and field screened for organic vapors. Contaminated soils were excavated and stockpiled. Stockpiled soils were sampled and analyzed. TPH concentrations of 1,056 ppm were detected. Groundwater samples were not collected. Soils exhibiting no evidence of contamination were used to backfill the excavation. Approximately 23.7 yd³ of contaminated soils were stockpiled to await treatment/disposal. Attached to this closure report was a VECP for not obtaining closure samples (see Section 1.2.6).

6.12.2 Field Investigation Activities

6.12.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Former Building 1202, Parcel 45(7). The soil boring locations are shown on Figure 6-14. Subsurface soil sampling locations and rationale are presented in Table 6-23. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.12.2.2 Monitoring Well Installation

Three permanent wells (UST-45-MW01, UST-45-MW02, and UST-45-MW03) were installed in the residuum groundwater zone at the Former Building 1202, Parcel 45(7) to collect groundwater samples for chemical analysis. The well/groundwater sample locations are shown on Figure 6-14. Well construction details of the permanent wells installed at the Former Building 1202, Parcel 45(7) are included in Table 3-1. The well construction logs are included in Appendix C.

6.12.2.3 Groundwater Sampling

The groundwater was sampled from monitoring wells UST-45-MW01, UST-45-MW02, and UST-45-MW03, as shown on Figure 6-14. The groundwater sampling location and rationale are listed in Table 6-23. The groundwater sample designations and QA/QC sample quantities are listed in Appendix A.

6.12.3 Field Variances

One variance to the SFSP was recorded during the completion of the UST closure assessment at the Former Building 1202, Parcel 45(7). The variance did not alter the intent of the investigation or the sampling rationale presented in Table 4-2 of the SFSP (IT, 1999b). The variance to the SFSP is presented in Appendix F.

6.12.4 Summary of Results

Three direct-push soil borings and three permanent monitoring wells were installed at the Former Building 1202, Parcel 45(7) to collect lithologic data and characterize the underlying geology. Total depth of the wells ranged from 69 to 73 feet bgs across the site. Based on this information, brown to yellowish-brown clay and silt extend from ground surface to approximately 40 feet bgs and overlie red, gray, and black weathered shale to approximately 73 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

The static groundwater levels were measured in the three permanent wells (UST-45-MW01, UST-45-MW02, and UST-45-MW03) at the Former Building 1202, Parcel 45(7) on March 13, 2000 following procedures outlined in Section 4.18 of the SAP (IT, 2000a). Groundwater was encountered from approximately 59 feet to 61 feet bgs across the site. As shown on Figure 6-2, groundwater flow at the site is both to the north and south. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Former Building 1202, Parcel 45(7) indicate that benzene, toluene, lead, and one PAH (phenanthrene) were detected in either subsurface soil or groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-24 and 6-25 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected for chemical analysis at the Former Building 1202, Parcel 45(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-13. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-24.

Subsurface soil samples were collected at 10 feet to 12 feet bgs at direct-push soil boring locations UST-45-GP01, UST-45-GP02, and UST-45-GP03. Benzene was detected in subsurface soil samples collected from direct-push soil borings UST-45-GP02 and UST-45-GP03, at concentrations of 0.0056 mg/kg and 0.012 mg/kg, respectively. Toluene was detected in all three soil boring locations, ranging in concentration from 0.012 mg/kg to 0.015 mg/kg. The highest concentration (0.015 mg/kg) was detected at soil boring location UST-45-GP01. Lead was detected at concentrations ranging from 45.9 mg/kg to 59.7 mg/kg. The highest concentration (59.7 mg/kg) was detected at soil boring location UST-45-GP03. Ethylbenzene and total xylenes were not detected in any of the subsurface soil samples collected. Benzene and toluene concentrations were below SSSLs. The lead results exceeded the background concentration but were below the SSSL in all three direct-push soil boring locations.

Groundwater. As shown on Table 6-25, benzene was detected in groundwater samples collected from monitoring wells UST-45-MW01 and UST-45-MW03 at concentrations of 0.00056 mg/L and 0.00021 mg/L, respectively. The highest concentration (0.00056 mg/L) was detected in monitoring well UST-45-MW01. Lead and phenanthrene were detected in the groundwater samples collected from monitoring well UST-45-MW03 at concentrations of 0.0726 mg/L and 0.00013 mg/L, respectively. PAHs and lead were not detected in monitoring wells UST-45-MW01 or UST-45-MW02. Lead exceeded the SSSL and background concentration at monitoring well location UST-45-MW03.

6.12.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Former Building 1202, Parcel 45(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, three permanent monitoring wells were installed in the

residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and three groundwater samples during the UST closure assessment at the Former Building 1202, Parcel 45(7). The analytical results indicate that benzene, toluene, and lead were detected in subsurface soil. Benzene, lead, and phenanthrene were detected in groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. Lead results exceeding SSSLs were compared to media-specific background lead concentrations to determine if they were within naturally occurring background ranges (SAIC, 1998).

With the exception of lead in one groundwater sample, the analytical results were below SSSLs. Lead exceeded both the SSSL and the background concentration in the groundwater sample collected from monitoring well location UST-45-MW03. However, as shown in purge records (Table 3-3 and Appendix D), the groundwater sample from UST-45-MW03 had a markedly higher turbidity than the groundwater samples from UST-45-MW01 and UST-45-MW02 at the time of sample collection. IT has determined the affect of elevated turbidity on metals concentrations in groundwater (IT, 2000b). The elevated lead results at former Building 1202, Parcel 45(7) are likely the result of high turbidity.

6.12.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Former Building 1202, Parcel 45(7) does not appear to have adversely impacted the environment. The petroleum constituents and lead detected in site media do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Former Building 1202, Parcel 45(7).

6.13 Underground Storage Tank, Dental Clinic Building 1929, Parcel 49(7)

6.13.1 Site Description and Previous Investigations

The Dental Clinic Building 1929, (Figure 6-15) had a 1,500-gallon heating oil UST that was removed and replaced with a 1,000-gallon UST in 1996. A closure report prepared by Theta was reviewed and is included in the UST summary report, Appendix A, Attachment 29 (IT, 1999a). The closure report documented that a product odor was not detected within the excavation. An examination of the removed tank revealed that the tank was in good condition. The depth to groundwater was estimated to be greater than 5 feet below the base of the excavation. This depth was determined by extending the excavation an additional 5 feet. Soil samples were not collected. The report notes that evidence of contamination was not observed. Approximately 131 yd³ of soils, including soils excavated for the new tank installation, were transported to the FTMC construction landfill as per the closure report. Attached to this closure report was a VECP for not obtaining closure samples (see Section 1.2.6).

6.13.2 Field Investigation Activities

6.13.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Dental Clinic Building 1929, Parcel 49(7). The soil boring locations are shown on Figure 6-15. Subsurface soil sampling locations and rationale are presented in Table 6-26. Subsurface soil samples were collected as described in Section 3.1.1 and in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations and QA/QC sample quantities are listed in Appendix A.

6.13.2.2 Monitoring Well Installation

One permanent well, UST-49-MW01, was installed in the residuum groundwater zone at the Dental Clinic Building 1929, Parcel 49(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-15. Table 3-1 summarizes construction details of well UST-49-MW01. The well construction log is included in Appendix C.

6.13.2.3 Groundwater Sampling

The groundwater was sampled from monitoring well UST-49-MW01, as shown on Figure 6-15. The groundwater sampling location and rationale are listed in Table 6-26. The groundwater sample designation is listed in Appendix A.

6.13.3 Field Variances

There were no variances to the SFSP during the completion of the UST closure assessment at the Dental Clinic Building 1929, Parcel 49(7).

6.13.4 Summary of Results

Three direct-push soil borings and one monitoring well were installed at the Dental Clinic Building 1929, Parcel 49(7) to collect lithologic data and characterize the underlying geology. Total depth of the borings and the well ranged from 5 feet to 7 feet bgs across the site. Based on this information, brown silt and shale are present from ground surface to approximately 7 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the drilling and installation of monitoring well UST-49-MW01, groundwater was encountered at approximately 3 feet bgs. Hollow-stem auger refusal was encountered at 7 feet bgs, therefore the well was installed at that depth. In addition, groundwater was encountered within 5 feet of the bottom of the UST. The static groundwater level was measured at permanent monitoring well UST-49-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-49-MW01 was 1.71 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the north. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Dental Clinic Building 1929, Parcel 49(7) indicate that ethylbenzene, toluene, total xylenes, lead, and PAHs were detected in subsurface soil samples. There were no chemical constituents detected in the groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, detected constituents were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Table 6-27 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected for chemical analysis at the Dental Clinic Building 1929, Parcel 49(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-15. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-27.

Subsurface soil samples were collected from 5 feet to 7 feet bgs at direct-push soil boring locations UST-49-GP01 and UST-49-MW01, and 5 feet to 6 feet bgs at direct-push soil boring location UST-49-GP02. Ethylbenzene was detected in the subsurface soil samples collected from all three direct-push soil boring locations at concentrations of 0.013 mg/kg and 0.014 mg/kg. The highest concentration (0.014 mg/kg) was detected at soil boring locations UST-49-GP01 and UST-49-GP02. Toluene was detected at soil boring locations UST-49-GP02 and UST-49-MW01, at concentrations of 0.0087 mg/kg and 0.015 mg/kg, respectively. Total xylenes were detected in all three soil boring locations, ranging in concentration from 0.023 mg/kg to 0.033 mg/kg. The highest concentration (0.033 mg/kg) was detected at soil boring location UST-49-MW01. The BTEX concentrations were below SSSLs.

Lead was detected in subsurface soil samples collected from all three soil boring locations, ranging in concentration from 13.9 mg/kg to 19.4 mg/kg. The highest concentration was detected in soil boring location UST-49-GP01, at 19.4 mg/kg. The lead concentrations were below the SSSL and the background concentrations.

Twelve PAHs were detected in the subsurface soil sample collected from soil boring location UST-49-MW01. The PAH benzo(a)pyrene (0.210 mg/kg) was detected at the highest concentration, exceeding the residential human health SSSL.

6.13.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Dental Clinic Building 1929 Parcel 49(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Dental Clinic Building 1929, Parcel 49(7). The analytical results indicate that ethylbenzene, toluene, total xylenes, lead, and PAHs were detected in the subsurface soil samples collected. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC.

With the exception of benzo(a)pyrene in one subsurface soil sample, none of the detected constituents exceeded the SSSLs. Benzo(a)pyrene was not detected in any of the other subsurface soil samples or the groundwater.

6.13.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Dental Clinic Building 1929, Parcel 49(7) does not appear to have impacted the environment. The trace concentrations of petroleum constituents and lead detected in subsurface soil samples do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required for the UST at the Dental Clinic Building 1929, Parcel 49(7).

6.14 Underground Storage Tank, PX Building 1965 Parcel 50(7)

6.14.1 Site Description and Previous Investigations

Building 1965 is known as the PX Building (Figure 6-16). A closure report, prepared by Theta, was reviewed and is included in the UST summary report, Appendix A, Attachment 30 (IT, 1999a). The report references that one 3,000-gallon heating oil UST was closed in-place in 1996. One soil boring was advanced to 20 feet bgs with continuous split-spoon sampling. Each sample was field screened with a PID. Evidence of contamination was not detected. Groundwater was determined to be greater than 20 feet bgs. Soil and groundwater sampling were not conducted.

6.14.2 Field Investigation Activities

6.14.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the PX Building 1965, Parcel 50(7). The soil boring locations are shown on the sample location map (Figure 6-16). Subsurface sampling locations and rationale are presented in Table 6-28. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface sample designations and QA/QC sample quantities are listed in Appendix A.

6.14.2.2 Monitoring Well Installation

One permanent monitoring well, UST-50-MW01, was installed in the residuum groundwater zone at the PX Building 1965, Parcel 50(7), to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-16. Table 3-1 summarizes the construction details of monitoring well UST-50-MW01. The well construction log is included in Appendix C.

6.14.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-50-MW01, as shown on Figure 6-16. The groundwater sample location and rationale are listed in Table 6-28. The groundwater sample designation and QA/QC samples are listed in Appendix A.

6.14.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the PX Building 1965, Parcel 50(7).

6.14.4 Summary of Results

Three direct-push soil borings were advanced and one permanent monitoring well was installed during the UST closure assessment at the PX Building 1965, Parcel 50(7). Sediments consist of brown clay from ground surface to approximately 7 feet bgs, which overlie predominantly gray, hard, weathered shale. The weathered shale was encountered at approximately 7 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-50-MW01, hollow-stem auger refusal was encountered at 22 feet bgs and groundwater was not present. Therefore, the well was installed at that depth. The static groundwater level was measured at permanent monitoring well UST-50-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-50-MW01 was 2.12 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the north. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the PX Building 1965, Parcel 50(7) indicate that toluene, ethylbenzene, total xylenes, and lead were detected in subsurface soil samples. Benzene was detected in the groundwater sample. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-29 and 6-30 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the PX Building 1965, Parcel 50(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-16. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-29.

Subsurface soil samples were collected from 5 feet to 7 feet bgs at direct-push soil boring locations UST-50-GP01, UST-50-GP02, and UST-50-MW01. Ethylbenzene was detected in the

subsurface soil sample collected from soil boring location UST-50-MW01 at a concentration of 0.014 mg/kg. Toluene was detected in soil boring location UST-50-GP01 at a concentration of 0.0069 mg/kg. Total xylenes were detected in all three soil boring locations, ranging in concentration from 0.013 mg/kg to 0.025 mg/kg. The highest concentration (0.025 mg/kg) was detected in soil boring location UST-50-MW01. The BTEX concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 13.1 mg/kg to 22.8 mg/kg. The highest concentration was detected in soil boring location UST-50-GP02 at 22.8 mg/kg. The lead results were below the SSSL and the background concentration.

Groundwater. Benzene was detected in the groundwater sample collected from monitoring well UST-50-MW01 at a concentration of 0.00023 mg/L. The concentration of benzene was below the SSSL.

6.14.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the PX Building 1965, Parcel 50(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the PX Building 1965, Parcel 50(7). The analytical results indicate that BTEX and lead were detected in the environmental media sampled. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. All analytical results were below SSSLs.

6.14.6 Recommendations

Based on the results of the UST closure assessment, the past operation of the UST at the PX Building 1965, Parcel 50(7) does not appear to have adversely impacted the environment. The

trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the PX Building 1965, Parcel 50(7).

6.15 Underground Storage Tank, Post Office Building 1966, Parcel 51(7)

6.15.1 Site Description and Previous Investigations

Building 1966 is known as the Post Office (Figure 6-17). A closure report, prepared by Southern Environmental Management & Specialties, Inc. (SEMS), was reviewed and is included in the UST summary report, Appendix A, Attachment 7 (IT, 1999a). The closure report references the 1996 closure of a 1,000-gallon heating oil UST and replacement with another 1,000-gallon UST. The tank was closed in-place by filling it with cement grout. Soil samples were collected from soil borings and field screened. Groundwater was determined to be greater than 5 feet below the base of the tank. This was determined during excavation of the new tank. Soil samples did not indicate the presence of contamination.

6.15.2 Field Investigation Activities

6.15.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Post Office Building 1966, Parcel 51(7). The soil boring locations are shown on the sample location map Figure 6-17. Subsurface soil sampling locations and rationale are presented in Table 6-31. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the (IT, 2000a). Subsurface soil sample designations and QA/QC sample quantities are listed in Appendix A.

6.15.2.2 Monitoring Well Installation

One permanent monitoring well, UST-51-MW01, was installed in the residuum groundwater zone at the Post Office Building 1966, Parcel 51(7) to collect groundwater samples for chemical analysis. The well/groundwater sample location is shown on Figure 6-17. Table 3-1 summarizes the construction details of monitoring well UST-51-MW01. The well construction log is included in Appendix C.

6.15.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-51-MW01, as shown on Figure 6-17. The groundwater sample location and rationale are listed in Table 6-31. The groundwater sample designation and QA/QC sample quantities are listed in Appendix A.

6.15.3 Field Variances

One variance to the SFSP was recorded during completion of the UST closure assessment at the Post Office Building 1966, Parcel 51(7). The variance did not alter the intent of the investigation or the sampling rationale presented in Table 4-1 of the SFSP (IT, 1999b). The variance to the SFSP is presented and summarized in Appendix F.

6.15.4 Summary of Results

Three direct-push soil borings were advanced and one permanent monitoring well was installed during the UST closure assessment, at the Post Office Building 1966, Parcel 51(7). Sediments consist of brown silt and clay from ground surface to approximately 9 feet bgs and overlie predominantly gray to black, hard, weathered shale to approximately 23.5 feet bgs. The weathered shale was encountered at approximately 9 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-51-MW01, groundwater was encountered at approximately 20 feet bgs. The static groundwater was measured at permanent monitoring well UST-51-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-51-MW01 was 11.02 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the north. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Post Office Building 1966, Parcel 51(7) indicate that ethylbenzene, total xylenes, and lead were detected in subsurface soil samples and benzene was detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-32 and 6-33 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the Post Office Building 1966, Parcel 51(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-17. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-32.

Subsurface soil samples were collected from 4 feet to 8 feet bgs at direct-push soil boring locations UST-51-GP01, UST-51-GP02, and UST-51-MW01. Ethylbenzene and total xylenes were detected in each of the three subsurface soil samples collected. Ethylbenzene concentrations ranged from 0.012 mg/kg to 0.014 mg/kg. The highest concentration (0.014 mg/kg) was detected in soil boring locations UST-51-GP01 and UST-51-MW01. Total xylenes concentrations ranged from 0.014 mg/kg to 0.021 mg/kg. The highest concentration (0.021 mg/kg) was detected at soil boring location UST-51-MW01. The ethylbenzene and total xylene concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 16.7 mg/kg to 22.6 mg/kg. The highest concentration was detected in soil boring location UST-51-GP02 at 22.6 mg/kg. The lead concentrations were below the SSSL and the background concentration. PAHs were not detected in any of the subsurface soil samples collected.

Groundwater. Benzene (0.0003 mg/L) was detected in the groundwater sample collected from monitoring well UST-51-MW01 at a concentration below the SSSL.

6.15.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Post Office Building 1966, Parcel 51(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Post Office Building 1966, Parcel 51(7). The analytical results indicate that ethylbenzene, total xylenes, and lead were detected in subsurface soil and benzene was detected

in the groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. None of the detected constituents exceeded the SSSLs or background concentrations.

6.15.6 Recommendations

Based on the results of the UST closure assessment, the past operation of the UST at the Post Office Building 1966, Parcel 51(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Post Office Building 1966, Parcel 51(7).

6.16 Underground Storage Tank, Barracks Building 3131, Parcel 54(7)

6.16.1 Site Description and Previous Investigations

The Barracks, Building 3131 (Figure 6-17) had a 20,000-gallon heating oil tank that was removed in 1996. A closure report prepared by Theta was reviewed and is included in the UST summary report, Appendix A, Attachment 32 (IT, 1999a). The closure report documented that product odor was not detected within the excavation. An examination of the removed tank revealed that the tank was in good condition. The depth to groundwater was estimated to be 11.5 feet bgs (groundwater entered the excavation). Neither soil nor groundwater samples were collected. The report notes that evidence of contamination was not observed. Approximately 32 yd³ of water-saturated soils were transported to the FTMC Borrow Pit. The remaining soils were returned to the excavation. Attached to the closure report was a VECP for not obtaining closure samples (Section 1.2.6). The Barracks, Building 3131, Parcel 54(7), falls within the “Possible Explosive Ordnance Impact Area” shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1999).

6.16.2 Field Investigation Activities

6.16.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Barracks Building 3131, Parcel 54(7). The soil boring locations are shown on Figure 6-18. Subsurface sampling locations and rationale are presented in Table 6-34. Subsurface soil samples were

collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.16.2.2 Monitoring Well Installation

One permanent monitoring well, UST-54-MW01, was installed in the residuum groundwater zone at the Barracks Building 3131, Parcel 54(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-18. Table 3-1 summarizes the construction details of monitoring well UST-54-MW01. The well construction log is included in Appendix C.

6.16.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-54-MW01, as shown on Figure 6-18. The groundwater sample location and rationale are listed in Table 6-34. The groundwater sample designation is listed in Appendix A.

6.16.3 Field Variances

One variance to the SFSP was recorded during completion of the UST closure assessment at the Barracks Building 3131, Parcel 54(7). The variance did not alter the intent of the investigation or the sampling rationale presented in Table 4-1 of the SFSP (IT, 1999b). The variance to the SFSP is presented in Appendix F.

6.16.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the Barracks Building 3131, Parcel 54(7) consist of brown silt and clay from ground surface to approximately 12 feet bgs overlying predominantly red to red-yellow clay and silt to approximately 50 feet bgs. Black, hard, weathered shale was encountered at 50 feet bgs and extends to at least 55 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-54-MW01, groundwater was encountered at approximately 43 feet bgs. The static groundwater level was measured at permanent monitoring well UST-54-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-54-MW01 was 19.20 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the southeast. Groundwater elevations are included in Appendix G.

The results of the chemical analysis of samples collected at the Barracks Building 3131, Parcel 54(7) indicate that total xylenes, lead, and PAHs were detected in subsurface soil samples. Total xylenes were detected in the groundwater sample. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-35 and 6-36 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the Barracks Building 3131, Parcel 54(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-18. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-35.

Subsurface soil samples were collected from 10 feet to 12 feet bgs at direct-push soil boring locations UST-54-GP01 and UST-54-GP02. Subsurface soil samples were collected from 6 feet to 8 feet bgs at direct-push soil boring location UST-54-MW01.

Total xylenes were detected in boring location UST-54-GP01 at a concentration (0.026 mg/kg) below the SSSL. Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 8.0 mg/kg to 16.4 mg/kg. The highest concentration was detected in soil boring location UST-54-GP02 at 16.4 mg/kg. The total lead concentrations were below the SSSL and the background concentration.

Ten PAHs were detected at soil boring location UST-54-MW01. PAHs were not detected in the subsurface soil samples collected from soil boring locations UST-54-GP01 or UST-54-GP02. The PAH concentrations were below the SSSLs.

Groundwater. Total xylenes (0.00023 mg/L) were detected in the groundwater sample collected from monitoring well UST-54-MW01 at a concentration below the SSSL.

6.16.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Barracks Building 3131, Parcel 54(7) at FTMC, Calhoun County, Alabama. The UST closure

assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Barracks Building 3131, Parcel 54(7). The analytical results indicate that total xylenes, lead, and PAHs were detected in the subsurface soil, and total xylenes were detected in the groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. None of the constituents detected exceeded the SSSLs.

6.16.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Barracks Building 3131, Parcel 54(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Barracks Building 3131, Parcel 54(7).

6.17 Underground Storage Tank, Headquarters Building 3161, Parcel 55(7)

6.17.1 Site Description and Previous Investigations

The Headquarters Building 3161 had a 1,000-gallon heating oil tank that was removed in 1996. A closure report prepared by Theta was reviewed and is included in the UST summary report, Appendix A, Attachment 33 (IT, 1999a). The closure report documented that product odor was not detected within the excavation. An examination of the removed tank revealed that the tank was in good condition. The depth to groundwater was reported to be unknown. Neither soil nor groundwater samples were collected. The report notes that evidence of contamination was not observed. Approximately 12.2 yd³ of soil was excavated and returned to the excavation. Attached to this closure report was a VECP for not obtaining closure samples.

6.17.2 Field Investigation Activities

6.17.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Headquarters Building 3161, Parcel 55(7). The soil boring locations are shown on Figure 6-19. Subsurface sampling locations and rationale are presented in Table 6-37. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface sample designations are listed in Appendix A.

6.17.2.2 Monitoring Well Installation

One permanent monitoring well, UST-55-MW01, was installed in the residuum groundwater zone at the Headquarters Building 3161, Parcel 55(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-19. Table 3-1 summarizes the construction details of monitoring well UST-55-MW01. The well construction log is included in Appendix C.

6.17.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-55-MW01, as shown on Figure 6-19. The groundwater sample location and rationale are listed in Table 6-37. The groundwater sample designation is listed in Appendix A.

6.17.3 Field Variances

There were no variances to the SFSP during completion of the UST closure assessment at the Headquarters Building 3161, Parcel 55(7).

6.17.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the Headquarters Building 3161, Parcel 55(7) consist of brown silt and clay from ground surface to approximately 39 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-55-MW01, groundwater was encountered at approximately 38 feet bgs. The static groundwater was measured at permanent monitoring well UST-55-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-55-

MW01 was 21.65 feet. As shown on Figure 6-2, groundwater flow at the site is to the south. Groundwater elevations are provided in Appendix G.

The results of the chemical analysis of samples collected at the Headquarters Building 3161, Parcel 55(7) indicate that ethylbenzene, toluene, total xylenes, lead, and PAHs were detected in subsurface soil samples. Ethylbenzene, total xylenes, and naphthalene were detected in the groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-38 and 6-39 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the Headquarters Building 3161, Parcel 55(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-19. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-38.

Subsurface soil samples were collected from 10 feet to 12 feet bgs at direct-push soil boring locations UST-55-GP01, UST-55-GP02, and UST-55-MW01. Ethylbenzene was detected at concentrations of 0.016 mg/kg and 0.031 mg/kg. The highest concentration (0.031 mg/kg) was detected at soil boring locations UST-55-GP02 and UST-55-MW01. Toluene was detected at a concentration of 0.007 mg/kg in soil boring location UST-55-GP02. Total xylenes were detected at concentrations ranging from 0.019 mg/kg to 0.081 mg/kg. The highest concentration (0.081 mg/kg) was detected at soil boring location UST-55-GP02. The BTEX concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 15.9 mg/kg to 20.6 mg/kg. The highest concentration of lead was detected in soil boring location UST-55-GP02 at 20.6 mg/kg. The lead concentrations were below the SSSL and the background concentration.

Four PAHs were detected in the subsurface soil samples collected. PAHs were detected in soil boring locations UST-55-GP02 and UST-55-MW01, with concentrations ranging from 0.0043

mg/kg to 0.016 mg/kg. PAHs were not detected in the subsurface soil sample collected at soil boring location UST-55-GP01. PAH concentrations were below SSSLs.

Groundwater. As shown in Table 6-39, ethylbenzene (0.00028 mg/L), total xylenes (0.00074 mg/L), and naphthalene (0.00096 mg/L) were detected in groundwater samples collected from monitoring well UST-55-MW01. The analytical results were below the SSSLs.

6.17.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Headquarters Building 3161, Parcel 55(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Headquarters Building 3161, Parcel 55(7). The analytical results indicate that ethylbenzene, toluene, total xylenes, lead, and PAHs were detected in the subsurface soil and ethylbenzene, total xylenes, and naphthalene were detected in the groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. The analytical results were below SSSLs.

6.17.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Headquarters Building 3161, Parcel 55(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Headquarters Building 3161, Parcel 55(7).

6.18 Underground Storage Tank, Community Club Building 3212, Parcel 56(7)

6.18.1 Site Description and Previous Investigations

The Community Club Building 3212 (Figure 6-20) had a 2,500-gallon heating oil tank that was closed in-place and replaced with another 2,500-gallon tank in 1996. A closure report, prepared by SEMS was reviewed and is included in the UST summary report, Appendix A, Attachment 7 (IT, 1999a). The depth to groundwater was determined to be greater than 5 feet below the bottom of the tank during the installation of the new tank. Neither soil nor groundwater samples were collected.

6.18.2 Field Investigation Activities

6.18.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Community Club Building 3212, Parcel 56(7). The soil boring locations are shown on Figure 6-20. Subsurface soil sampling locations and rationale are presented in Table 6-40. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations and QA/QC sample quantities are listed in Appendix A.

6.18.2.2 Monitoring Well Installation

One permanent monitoring well, UST-56-MW01, was installed in the residuum groundwater zone at the Community Club Building 3212, Parcel 56(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-20. Table 3-1 summarizes the construction details of monitoring well UST-56-MW01. The well construction log is included in Appendix C.

6.18.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-56-MW01, as shown on Figure 6-20. The groundwater sample location and rationale are listed in Table 6-40. The groundwater sample designation is listed in Appendix A.

6.18.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the Community Club Building 3212, Parcel 56(7).

6.18.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the Community Club Building 3212, Parcel 56(7) consist of brown silt, sand, and clay from ground surface to approximately 11 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-56-MW01, groundwater was encountered at approximately 7.5 feet bgs. Depth to groundwater is most probably not greater than 5 feet below the bottom of the UST. This determination is based upon the size of the UST (2,500 gallons) and depth groundwater was encountered (7.5 feet bgs) during drilling. The static groundwater level was measured at permanent monitoring well UST-56-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-56-MW01 was 2.98 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the east. Groundwater elevations are provided in Appendix G.

The results of the chemical analysis of samples collected at the Community Club Building 3212, Parcel 56(7) indicate that ethylbenzene, toluene, total xylenes, lead, and PAHs were detected in the subsurface soil and benzene was detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-41 and 6-42 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the Community Club Building 3212, Parcel 56(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-20. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-41.

Ethylbenzene was detected in subsurface soil samples collected from soil boring locations UST-56-GP02 and UST-56-MW01 at concentrations of 0.012 mg/kg and 0.016 mg/kg, respectively. Toluene was detected at concentrations of 0.0065 mg/kg and 0.014 mg/kg, respectively. Total xylenes were detected at all three subsurface soil sample locations at concentrations ranging from 0.023 mg/kg to 0.041 mg/kg. The highest concentration (0.041 mg/kg) was detected at soil boring location UST-56-MW01. The BTEX concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 3.9 mg/kg to 14.9 mg/kg. The highest concentration of lead was detected in soil boring location UST-56-GP02 at 14.9 mg/kg. The lead concentrations were below the SSSL and the background concentration.

Five PAHs were detected in two of the three subsurface soil samples collected (UST-56-GP01 and UST-56-MW01). The PAH concentrations ranged from 0.0043 mg/kg to 0.3 mg/kg. PAHs were not detected in soil boring location UST-56-GP02. PAH concentrations were below SSSLs.

Groundwater. Benzene was detected in the groundwater sample collected from monitoring well UST-56-MW01 at a concentration (0.00033 mg/L) below the SSSL.

6.18.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Community Club Building 3212, Parcel 56(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Community Club Building 3212, Parcel 56(7). The analytical results indicate that ethylbenzene, toluene, total xylenes, lead, and PAHs were detected in the subsurface soil, and benzene was detected in the groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part

of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC.

None of the detected constituents exceeded the SSSLs or background concentrations.

6.18.6 Recommendations

Based on the results of the UST closure assessment, the past operation of the UST at the Community Club Building 3212, Parcel 56(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Community Club Building 3212, Parcel 56(7).

6.19 Underground Storage Tank, Recreation Center Building 3213, Parcel 57(7)

6.19.1 Site Description and Previous Investigation

The Recreation Center Building 3213 (Figure 6-20) had a 4,000-gallon heating oil UST that was removed in 1996. A closure report, prepared by SEMS, Inc., was reviewed and is included in the UST summary report, Appendix A, Attachment 7 (IT, 1999a). The closure report documented that product odor was not detected within the excavation. An examination of the removed tank revealed that the tank was in good condition. The depth to groundwater was reported to be greater than 5 feet below the bottom of the tank. This was determined by extending the excavation an additional 5 feet. Neither soil nor groundwater samples were collected. The report notes that evidence of contamination was not observed. Approximately 60 yd³ of soil were excavated during the UST removal action, and subsequently returned to the excavation.

6.19.2 Field Investigation Activities

6.19.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Recreation Center Building 3213, Parcel 57(7). The soil boring locations are shown on the sample location map Figure 6-21. Subsurface soil sampling locations and rationale are presented in Table 6-43. Subsurface soil samples were collected in accordance with the direct-push sampling procedures

specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.19.2.2 Monitoring Well Installation

One permanent monitoring well, UST-57-MW01, was installed in the residuum groundwater zone at the Recreation Center Building 3213, Parcel 57(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-21. Table 3-1 summarizes the construction details of monitoring well UST-57-MW01. The well construction log is included in Appendix C.

6.19.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-57-MW01, as shown on Figure 6-21. The groundwater sample location and rationale are listed in Table 6-43. The groundwater sample designation is listed in Appendix A.

6.19.3 Field Variances

One variance to the SFSP was recorded during completion of the UST closure assessment at the Recreation Building 3213, Parcel 57(7). The variance did not alter the intent of the investigation or the sampling rationale presented in Table 4-1 of the SFSP (IT, 1999b). The variance to the SFSP is presented in Appendix F.

6.19.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the Recreation Building 3213, Parcel 57(7) consist of brown silt and clay overlying weathered shale. Yellowish-orange severely weathered shale was encountered at approximately 14 feet bgs and extended to at least 34 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-57-MW01, groundwater was encountered at approximately 30 feet bgs. The static groundwater level was measured at permanent monitoring well UST-57-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-57-MW01 was 15.48 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the south. Groundwater elevations are provided in Appendix G.

The results of the chemical analysis of samples collected at the Recreation Center Building 3213, Parcel 57(7) indicate that BTEX, lead, and PAHs were detected in subsurface soil. Benzene and total xylenes were detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-44 and 6-45 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the Recreation Center Building 3213, Parcel 57(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-21. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-44.

Subsurface soil samples were collected from 4 to 12 feet bgs at direct-push soil boring locations UST-57-GP01, UST-57-GP02, and UST-57-MW01. Benzene was detected at a concentration of 0.020 mg/kg at soil boring location UST-57-GP01. Ethylbenzene was detected in each subsurface soil sample collected at concentrations ranging from 0.015 mg/kg to 0.13 mg/kg. The highest concentration (0.13 mg/kg) was detected at soil boring location UST-57-GP01. Toluene was detected in subsurface soil samples collected from soil boring locations UST-57-GP01 and UST-57-MW01 at concentrations of 0.087 mg/kg and 0.0058 mg/kg, respectively. Total xylenes were detected in each subsurface soil sample collected at concentrations ranging from 0.02 mg/kg to 0.80 mg/kg. The highest concentration (0.80 mg/kg) was detected at soil boring location UST-57- GP01. The BTEX concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 12.2 mg/kg to 16.1 mg/kg. The highest concentration (16.1 mg/kg) was detected in soil boring location UST-57-MW01. The lead concentrations were below the SSSL and the background concentration.

Four PAHs were detected in the subsurface soil sample collected from soil boring location UST-57-GP01. PAH concentration ranged from 0.24 mg/kg to 1.2 mg/kg. The PAHs fluorene (1.2 mg/kg) and naphthalene (1.2 mg/kg) were detected at the highest concentrations. PAHs were not detected in the subsurface soil samples collected from soil boring locations UST-57-GP02 or UST-57-MW01. The PAH concentrations were below SSSLs.

Groundwater. As shown in Table 6-45, benzene (0.00082 mg/L) and total xylenes (0.00056 mg/L) were detected in the groundwater sample collected from monitoring well UST-57-MW01. PAHs and lead were not detected in groundwater. The benzene and total xylene concentrations were below SSSLs.

6.19.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Recreation Center Building 3213, Parcel 57(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Recreation Center Building 3213, Parcel 57(7). The analytical results indicate that BTEX, lead, and PAHs were detected in subsurface soils. Benzene and total xylenes were detected in groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. None of the detected constituents exceeded the SSSLs or background concentrations.

6.19.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Recreation Center Building 3213, Parcel 57(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential

land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Recreation Center Building 3213, Parcel 57(7).

6.20 Underground Storage Tank, Chapel Building 3293, Parcel 58(7)

6.20.1 Site Description and Previous Investigations

The Chapel Building 3293 (Figure 6-22) had a 4,000-gallon heating oil UST that was removed in 1996. A closure report prepared by Theta was reviewed and is included in the UST summary report, Appendix A, Attachment 34. The closure report documented that product odor was not detected within the excavation. An examination of the removed tank revealed that the tank was in good condition. The depth to groundwater was reported to be unknown. Neither soil nor groundwater samples were collected. The report notes that evidence of contamination was not observed. Approximately 182.5 yd³ of soil were excavated during the UST removal action. Forty-eight yd³ of soil were unsuitable for compaction and were transported to the borrow pit for disposal. The remaining soils were used to backfill the tank pit. Attached to this closure report was a VECP for not obtaining closure samples.

6.20.2 Field Investigation Activities

6.20.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Chapel Building 3293, Parcel 58(7). The soil boring locations are shown on the sample location map Figure 6-22. Subsurface soil sampling locations and rationale are presented in Table 6-46. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.20.2.2 Monitoring Well Installation

One permanent monitoring well, UST-58-MW01, was installed in the residuum groundwater zone at the Chapel Building 3293, Parcel 58(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-22. Table 3-1 summarizes the construction details of monitoring well UST-58-MW01. The well construction log is included in Appendix C.

6.20.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-58-MW01, as shown on Figure 6-22. The groundwater sample location and rationale are listed in Table 6-46. The groundwater sample designation is listed in Appendix A.

6.20.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the Chapel Building 3293, Parcel 58(7).

6.20.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the Chapel Building 3293, Parcel 58(7) consist of brown silt and clay overlying weathered shale. Yellowish-orange to light-gray, severely weathered shale was encountered at approximately 9 feet bgs and extended to at least 40 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-58-MW01, groundwater was encountered at approximately 30 feet bgs. The static groundwater level was measured at permanent monitoring well UST-58-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-58-MW01 was 15.14 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the south. Groundwater elevations are presented in Appendix G.

The results of the chemical analysis of samples collected at the Chapel Building 3293, Parcel 58(7), indicate that ethylbenzene, total xylenes, and lead were detected in the subsurface soil. There were no chemical constituents detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Table 6-47 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix G.

Subsurface Soil. Three subsurface soil samples were collected at the Chapel Building 3293, Parcel 58(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the

locations shown on Figure 6-22. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-47.

Subsurface soil samples were collected from 4 feet to 6 feet bgs at direct-push soil boring location UST-58-MW01 and from 5 feet to 7 feet bgs at soil boring locations UST-58-GP01 and UST-58-GP02. Ethylbenzene was detected in each subsurface soil sample collected at concentrations ranging from 0.012 mg/kg to 0.028 mg/kg. The highest concentration (0.028 mg/kg) was detected at soil boring location UST-58-GP02. Total xylenes were detected in each subsurface soil sample collected at concentrations ranging from 0.019 mg/kg to 0.044 mg/kg. The highest concentration (0.044 mg/kg) was detected at soil boring location UST-58-GP02. The ethylbenzene and xylene concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 18.3 mg/kg to 23.7 mg/kg. The highest concentration was detected in soil boring location UST-58-MW01 at 23.7 mg/kg. The lead results were below the SSSL and the background concentration. Benzene, toluene, and PAHs were not detected in any of the subsurface soil samples collected.

6.20.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Chapel Building 3293, Parcel 58(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Chapel Building 3293, Parcel 58(7). The analytical results indicate that ethylbenzene, total xylenes, and lead were detected in the subsurface soil. There were not any chemical constituents detected in groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration

Program at FTMC. None of the detected constituents exceeded the SSSLs or background concentrations.

6.20.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Chapel Building 3293, Parcel 58(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program and “No Further Action” is required for the Chapel Building 3293, Parcel 58(7).

6.21 Underground Storage Tank, Personnel Building 162, Parcel 63(7)

6.21.1 Site Description and Previous Investigations

The Personnel Building 162 (Figure 6-23) had a 2,500-gallon heating oil tank that was removed in 1996. A closure report, prepared by Theta, was reviewed and is included in the UST summary report, Appendix A, Attachment 35 (IT, 1999a). The closure report documented that product odor was not detected within the excavation. An examination of the removed tank revealed that the tank was in good condition. The depth to groundwater was reported to be greater than 5 feet below the bottom of the tank. Neither soil nor groundwater samples were collected. The report notes that evidence of contamination was not observed. The excavated soil was used to backfill the tank pit. Attached to this closure report was a VECP for not obtaining closure samples (see Section 1.2.6).

6.21.2 Field Investigation Activities

6.21.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the Personnel Building 162, Parcel 63(7). The soil boring locations are shown on the sample location map Figure 6-23. Subsurface soil sampling locations and rationale are presented in Table 6-48. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.21.2.2 Monitoring Well Installation

One permanent monitoring well, UST-63-MW01, was installed in the residuum groundwater zone at the Personnel Building 162, Parcel 63(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-23. Table 3-1 summarizes the construction details of monitoring well UST-63-MW01. The well construction log is included in Appendix C.

6.21.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-63-MW01, as shown on Figure 6-23. The groundwater sample location and rationale are listed in Table 6-48. The groundwater sample designation is listed in Appendix A.

6.21.3 Field Variances

One variance to the SFSP was recorded during completion of the UST closure assessment at the Personnel Building 162, Parcel 63(7). The variance did not alter the intent of the investigation or the sampling rationale presented in Table 4-1 of the SFSP (IT, 1999b). The variance to the SFSP is presented in Appendix F.

6.21.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the Personnel Building 162, Parcel 63(7) consist of brown silt and clay overlying weathered shale. Brown to grayish-black, severely weathered shale was encountered at approximately 6 feet bgs and extends to at least 65 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-63-MW01, groundwater was encountered at approximately 57 feet bgs. The static groundwater level was measured at permanent monitoring well UST-63-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-63-MW01 was 19.21 feet. As shown on Figure 6-2, groundwater flow at the site is to the east. Groundwater elevations are provided in Appendix G.

The results of the chemical analysis of samples collected at the Personnel Building 162, Parcel 63(7) indicate that toluene, total xylenes, and lead were detected in subsurface soil and benzene was detected in the groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the

SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-49 and 6-50 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the Personnel Building 162, Parcel 63(7). The subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-23. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-49.

Subsurface soil samples were collected from 10 feet to 12 feet bgs at direct-push soil boring locations UST-63-GP01, UST-63-GP02, and UST-63-MW01. Toluene was detected at a concentration of 0.0063 mg/kg at soil boring location UST-63-GP01. Total xylenes were detected in each of the subsurface soil samples collected at concentrations ranging from 0.015 mg/kg to 0.022 mg/kg. The highest concentration was detected at soil boring location UST-63-GP01 at 0.022 mg/kg. The toluene and total xylene concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 12.7 mg/kg to 20.6 mg/kg. The highest concentration was detected in soil boring location UST-63-GP01 at 20.6 mg/kg. The lead concentrations were below the SSSL and the background concentration. PAHs were not detected in any of the subsurface soil samples collected.

Groundwater. As shown in Table 6-50, benzene (0.00088 mg/L) was detected in the groundwater sample collected from monitoring well UST-63-MW01. PAHs and lead were not detected in groundwater. The benzene concentration was below the SSSL.

6.21.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the Personnel Building 162, Parcel 63(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum

groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the Personnel Building 162, Parcel 63(7). The analytical results indicate that toluene, total xylenes, and lead were detected in the subsurface soil. Benzene was detected in the groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. None of the detected constituents exceeded the SSSLs or background concentrations.

6.21.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the Personnel Building 162, Parcel 63(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Personnel Building 162, Parcel 63(7).

6.22 Underground Storage Tank, Women’s Army Corps Museum Building 1077, Parcel 167(7)

6.22.1 Site Description and Previous Investigations

The WAC Museum Building 1077 (Figure 6-24) previously had two 1,000-gallon heating oil USTs. One UST, tracked as Parcel 15(7), was removed in 1990 and replaced with another 1,000-gallon UST Parcel 167(7). Minimal soil contamination was found at the site. After three monitoring wells were installed, sampled, and analyzed, the SI report concluded that no further action was required (IT, 1999a).

The second 1,000-gallon heating oil tank (Parcel 167[7]) was removed in 1996. A closure report, prepared by Theta, was reviewed and is included in the UST summary report, Appendix A, Attachment 36 (IT, 1999a). The closure report describes the removal of the second 1,000-gallon heating oil tank and its associated piping in August 1996. During this closure, no notable product odor was found within the excavation. Depth to groundwater was determined by

excavating an additional 5 feet below the base of the pit. There was not any evidence of contamination and excavated soils were returned to the excavation. Environmental samples were not collected for analysis. Attached to this closure report was a VECP for not obtaining closure samples (see Section 1.2.6).

6.22.2 Field Investigation Activities

6.22.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at the WAC Museum Building 1077, Parcel 167(7). The soil boring locations are shown on Figure 6-24. Subsurface sampling locations and rationale are presented in Table 6-51. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface sample designations are listed in Appendix A.

6.22.2.2 Monitoring Well Installation

One permanent monitoring well, UST-167-MW01, was installed in the residuum groundwater zone at the WAC Museum Building 1077, Parcel 167(7) to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-24. Table 3-1 summarizes the construction details of monitoring well UST-167-MW01. The well construction log is included in Appendix C.

6.22.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-167-MW01, as shown on Figure 6-24. The groundwater sample location and rationale are listed in Table 6-51. The groundwater sample designation is listed in Table 3-1. The three existing monitoring wells (UST-167-MW02, UST-167-MW03, and UST-167-MW04) were not sampled during this investigation.

6.22.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at the WAC Museum Building 1077, Parcel 167(7).

6.22.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the WAC Museum Building 1077, Parcel 167(7) consist of brown and gray silt overlying weathered shale. Gray, severely weathered shale was encountered at

approximately 12 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the installation of monitoring well UST-167-MW01, groundwater was encountered at approximately 29 feet bgs. The static groundwater level was measured at permanent monitoring well UST-167-MW01 and existing monitoring wells UST-167-MW02, UST-167-MW03, and UST-167-MW04 on April 14, 2000. The average static groundwater measured in the four monitoring wells was approximately 3.5 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the northeast. Groundwater elevations are provided in Appendix G.

The results of the chemical analysis of samples collected at the WAC Museum Building 1077, Parcel 167(7) indicate that ethylbenzene, total xylenes, and lead were detected in subsurface soil. Lead and the PAH phenanthrene were detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-52 and 6-53 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at the WAC Museum Building 1077, Parcel 167(7). The subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-24. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-52.

Subsurface soil samples were collected from 5 to 7 feet bgs at direct-push soil boring locations UST-167-GP02 and UST-167-MW01. The subsurface soil sample was collected from 5 feet to 6 feet bgs at soil boring location UST-167-GP01. Ethylbenzene was detected in subsurface soil samples collected from soil boring locations UST-167-GP01 and UST-167-MW01, at concentrations of 0.011 mg/kg and 0.018 mg/kg, respectively. Total xylenes were detected in each of the subsurface soil samples collected at concentrations ranging from 0.015 mg/kg to 0.031 mg/kg. The highest concentration (0.031 mg/kg) was detected at soil boring location UST-167-MW01. The ethylbenzene and xylene concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 11.2 mg/kg to 13.6 mg/kg. The highest concentration of lead was detected in soil boring location UST-167-GP01 at 13.6 mg/kg. PAHs were not detected in any of the subsurface soil samples collected. The lead concentrations were below the SSSL and the background concentration.

Groundwater. As shown on Table 6-53, phenanthrene (0.00038 mg/L) and lead (0.0552 mg/L) were detected in the groundwater sample collected from monitoring well UST-167-MW01. BTEX was not detected in the groundwater. The phenanthrene concentration was below the SSSL. The concentration of lead exceeded the SSSL and background concentration.

6.22.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at the WAC Museum Building 1077, Parcel 167(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at the WAC Museum Building 1077, Parcel 167(7). The analytical results indicate that ethylbenzene, total xylenes, and lead were detected in subsurface soils. Phenanthrene and lead were detected in groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. Additionally, lead results exceeding SSSLs were compared to media-specific background concentrations (SAIC, 1998).

With the exception of lead in the groundwater sample, the concentrations of the detected constituents were below SSSLs. Lead exceeded the residential human health SSSL and background concentration in the groundwater sample. Although lead was detected at a concentration exceeding human health SSSLs, the potential impact to human receptors is expected to be minimal. This conclusion is based on the limited area of contamination and the

future land use of the WAC Museum Building 1077, Parcel 167(7) , which is expected to be occupied as office space.

6.22.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at the WAC Museum Building 1077, Parcel 167(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the WAC Museum, Building 1077, Parcel 167(7).

6.23 Underground Storage Tank, Building 1338, Parcel 502(7)

6.23.1 Site Description and Previous Investigations

Building 1338 previously had a 150-gallon UST for the storage of gasoline (Figure 6-25). This UST was not assigned a Community Environmental Response Facilitation Act parcel label because of the small quantity of fuel stored. Reportedly, the tank was used to fuel a generator associated with a sewage lift station. This tank was removed and replaced with a 500-gallon UST in 1996. A closure report, prepared by SEMS, was reviewed and is included in the UST summary report, Appendix A, Attachment 7 (IT, 1999a). Product odor was not detected during the tank closure activities. The depth to water was determined to be greater than 5 feet below the bottom of the tank during the installation of the newer tank. Sampling and analysis were not performed.

6.23.2 Field Investigation Activities

6.23.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at Building 1338, Parcel 502(7). The soil boring locations are shown on the sample location map Figure 6-25. Subsurface soil sampling locations and rationale are presented in Table 6-54. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations and QA/QC samples are listed in Appendix A.

6.23.2.2 Monitoring Well Installation

Three permanent monitoring wells (UST-502-MW01, UST-502-MW02, and UST-502-MW03) were installed in the residuum groundwater zone at Building 1338, Parcel 502(7) to collect groundwater samples for chemical analysis. The well/groundwater sample locations are shown on Figure 6-25. Table 3-1 summarizes the construction details of monitoring wells UST-502-MW01, UST-502-MW02, and UST-502-MW03. The well construction logs are included in Table 3-1.

6.23.2.3 Groundwater Sampling

The groundwater was sampled in monitoring wells UST-502-MW01, UST-502-MW02, and UST-502-MW03, as shown on Figure 6-25. The groundwater sample location and rationale are listed in Table 6-54. The groundwater sample designations are listed in Appendix A.

6.23.3 Field Variances

Two variances to the SFSP were recorded during completion of the UST closure assessment at Building 1338, Parcel 502(7). The variances did not alter the intent of the investigation or the sampling rationale presented in Table 4-1 of the SFSP (IT, 1999b). The variances to the SFSP are presented in Appendix F.

6.23.4 Summary of Results

Three soil borings were advanced and three permanent monitoring wells were installed at Building 1338, Parcel 502(7) to collect lithologic data and characterize the underlying geology. Total depth of the borings and wells ranged from 11.5 to 19 feet bgs across the site. Based on this information, brown to gray silt, sand, and clay are present from ground surface to an average depth of 13 feet bgs and overlie weathered gray shale to approximately 19 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During drilling and monitoring well installation activities, groundwater was encountered at an approximate depth of 10 feet bgs across the site. Based on the size of the UST, depth to groundwater is probably greater than 5 feet below the bottom of the UST. The depth to groundwater was measured in the three permanent wells (UST-502-MW01, UST-502-MW02, and UST-502-MW03) at Building 1338, Parcel 502(7) on March 14, 2000. Based on groundwater level measurements, the groundwater level in monitoring well UST-502-MW03 (9.25 feet bgs) is approximately 2 feet deeper than the groundwater levels in monitoring wells UST-502-MW01 (7.60 feet bgs) and UST-502-MW02 (7.29 feet bgs). The localized depressed

groundwater level in monitoring well UST-502-MW03 has created a “mounding effect,” diverting the natural groundwater flow to the south/southeast. The “mounding effect” is probably caused by the sewage lift station and several underground utility lines (Figure 6-24). As shown on Figure 6-2, the groundwater flow at the site is to the north. Groundwater elevations are provided in Appendix G.

The results of the chemical analysis of samples collected at Building 1338, Parcel 502(7) indicate that BTEX and lead were detected in subsurface soil. Benzene and toluene were detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-55 and 6-56 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at Building 1338, Parcel 502(7). The subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-25. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-55.

Subsurface soil samples were collected from 10 to 12 feet bgs at direct-push soil boring locations UST-502-GP01, UST-502-GP02, and UST-502-GP03. BTEX compounds were detected in the subsurface soil samples at concentrations ranging from 0.013 mg/kg to 0.039 mg/kg. The BTEX concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 6.4 mg/kg to 8.6 mg/kg. The highest concentration of lead was detected in soil boring locations UST-502-GP02 and UST-502-GP03 at 8.6 mg/kg. The lead concentrations were below the SSSL and background concentration. PAHs were not detected in any of the subsurface soil samples collected.

Groundwater. Benzene (0.00091 mg/L) and toluene (0.00029 mg/L) were detected in the groundwater sample collected from monitoring well UST-502-MW03. There were no chemical constituents detected in groundwater samples collected from monitoring wells UST-502-MW01 or UST-502-MW02. The benzene and toluene concentrations were below SSSLs.

6.23.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at Building 1338, Parcel 502(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, three permanent monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and three groundwater samples during the UST closure assessment at Building 1338, Parcel 502(7). The analytical results indicate that BTEX and lead were detected in the subsurface soil samples and benzene and toluene were detected in groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. None of the detected constituents exceeded the SSSLs or background concentrations.

6.23.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at Building 1338, Parcel 502(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Building 1338, Parcel 502(7).

6.24 Underground Storage Tank, Building 3179, Parcel 505(7)

6.24.1 Site Description and Previous Investigations

In 1991, IT removed a UST with a capacity of approximately 1,400 gallons near Building 3179. Approximately 750 gallons of gasoline and water were removed from the tank prior to removal. IT personnel conducted a site visit to verify the location of the former UST on June 1, 1999. The exact UST excavation area could not be determined based on visual interpretation (Figure 6-26).

Other additional information or analytical data was not available for review. Also during the June 1999 IT site visit, aboveground storage tank racks were observed on the north side of Building 3179; however, there was not any information on any tank that may have been contained on the racks.

6.24.2 Field Investigation Activities

6.24.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at Building 3179, Parcel 505(7). The soil boring locations are shown on the sample location map Figure 6-26. Subsurface soil sampling locations and rationale are presented in Table 6-57. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations are listed in Appendix A.

6.24.2.2 Monitoring Well Installation

Two permanent monitoring wells (UST-505-MW01 and UST-505-MW02) were installed in the residuum groundwater zone at Building 3179, Parcel 505(7), to collect groundwater samples for chemical analysis. The well/groundwater sample locations are shown on Figure 6-26. Table 3-1 summarizes the construction details of monitoring wells UST-505-MW01 and UST-505-MW02. The well construction logs are included in Appendix C.

6.24.2.3 Groundwater Sampling

The groundwater was sampled in monitoring wells UST-505-MW01 and UST-505-MW02, as shown on Figure 6-26. The groundwater sample locations and rationale are listed in Table 6-57. The groundwater sample designations are listed in Appendix A.

6.24.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at Building 3179, Parcel 505(7).

6.24.4 Summary of Results

Based on direct-push and hollow-stem auger boring data collected during the UST closure assessment, sediments beneath the Building 3179, Parcel 505(7) consist of light-brown to yellowish-brown sand overlying a yellowish-brown clay lens at approximately 13 feet bgs. The

clay lens overlies brown silts and sands to approximately 19 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During the drilling and installation of monitoring wells UST-505-MW01 and UST-505-MW02, groundwater was encountered at approximately 15 feet bgs. The static groundwater level was measured at permanent monitoring wells UST-505-MW01 and UST-505-MW02 on March 13, 2000. The average static water level measured in the two monitoring wells was approximately 11.5 feet bgs. As shown on Figure 6-2, groundwater flow at the site is to the north. Groundwater elevations are presented in Appendix G.

The results of the chemical analysis of samples collected at Building 3170, Parcel 505(7) indicate that ethylbenzene, toluene, total xylenes, and lead were detected in subsurface soil and toluene was detected in groundwater. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Tables 6-58 and 6-59 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at Building 3179, Parcel 505(7). The subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-26. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-58.

Ethylbenzene, total xylenes, and toluene were detected in subsurface soil samples. Total xylenes were detected at concentrations ranging from 0.013 mg/kg to 2.7 mg/kg. The ethylbenzene, toluene, and total xylene concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 9.7 mg/kg to 16.2 mg/kg. The highest concentration was detected at soil boring location UST-505-GP03 at 16.2 mg/kg. The lead concentrations were below the SSSL and the background concentration. The toluene concentrations were below SSSL. PAHs were not detected in any of the subsurface soil samples collected.

Groundwater. As shown in Table 6-59, toluene was detected in the groundwater samples collected from monitoring wells UST-505-MW01 and UST-505-MW02, at concentrations of 0.00056 mg/L to 0.00026 mg/L, respectively. The toluene concentrations were below SSSLs. PAHs and lead were not detected in groundwater.

6.24.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at Building 3179, Parcel 505(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and groundwater samples. In addition, two permanent monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and two groundwater samples during the UST closure assessment at Building 3179, Parcel 505(7). The analytical results indicate that ethylbenzene, toluene, total xylenes, and lead were detected in the subsurface soils and toluene was detected in groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC. None of the detected constituents exceeded the SSSLs or background concentrations.

6.24.6 Recommendations

Based on the results of the UST closure assessment and previously reported removal activities, the past operation of the UST at Building 3179, Parcel 505(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Building 3179, Parcel 505(7).

6.25 Underground Storage Tank, Building 3691, Parcel 506(7)

6.25.1 Site Description and Previous Investigations

Building 3691 has a 150-gallon UST used for the storage of gasoline (Figure 6-27). This UST was not assigned Community Environmental Response Facilitation Act parcel label because of the small quantity of fuel stored. Reportedly, the tank fuels a generator associated with a sewage lift station. A former 150-gallon UST was closed in-place and replaced with the current 150-gallon UST in 1996. A closure report prepared by SEMS was reviewed and is included in the UST summary report, Appendix A, Attachment 7 (IT, 1999a). During the tank closure, product odor was not detected. The depth to water was determined to be greater than 5 feet below the bottom of the tank during the installation of the newer tank. Neither soil nor groundwater sampling was completed.

6.25.2 Field Investigation Activities

6.25.2.1 Direct-Push Subsurface Soil Sampling

Subsurface soil samples were collected from three direct-push soil borings at Building 3691, Parcel 506(7). The soil boring locations are shown on the sample location map Figure 6-27. Subsurface soil sampling locations and rationale are presented in Table 6-60. Subsurface soil samples were collected in accordance with the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Subsurface soil sample designations and QA/QC sample quantities are listed in Appendix A.

6.25.2.2 Monitoring Well Installation

One permanent monitoring well, UST-506-MW01, was installed in the residuum groundwater zone at Building 3691, Parcel 506(7), to collect a groundwater sample for chemical analysis. The well/groundwater sample location is shown on Figure 6-27. Table 3-1 summarizes the construction details of monitoring well UST-506-MW01. The well construction log is included in Appendix C.

6.25.2.3 Groundwater Sampling

The groundwater was sampled in monitoring well UST-506-MW01, as shown on Figure 6-27. The groundwater sample location and rationale are listed in Table 6-60. The groundwater sample designation is listed in Appendix A.

6.25.3 Field Variances

There were no variances to the SFSP recorded during the completion of the UST closure assessment at Building 3691, Parcel 506(7).

6.25.4 Summary of Results

Three soil borings were advanced and one monitoring well was installed at Building 3691, Parcel 506(7) to collect lithologic data to characterize the underlying geology. Total depth of the borings and well ranged from 8 feet to 47 feet bgs. Based on this information, brown silt and clay extend from ground surface to approximately 14 feet bgs. Yellowish-orange, moderate to high-plasticity clay, overlain by the brown silt and clay, extends to at least 47 feet bgs. A detailed soil description can be found on the soil boring logs located in Appendix C.

During drilling and installation of monitoring well UST-506-MW01, groundwater was encountered at approximately 39 feet bgs. The static groundwater level was measured at permanent monitoring well UST-506-MW01 on March 13, 2000. Static groundwater measured in monitoring well UST-506-MW01 was 13.65 feet bgs. Groundwater elevation data for this portion of FTMC is inadequate to construct flow data and therefore, this site is not represented on Figure 6-2. However, based on surface topography, groundwater flow at the site is likely to be toward the west.

The results of the chemical analysis of samples collected at Building 3691, Parcel 506(7) indicate that ethylbenzene, toluene, total xylenes, and lead were detected in subsurface soil samples. There were no chemical constituents detected in groundwater. To evaluate whether the

detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the SSSLs for FTMC. The SSSLs were compiled for FTMC for human health evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. The following sections and Table 6-61 summarize the results of the comparison of detected constituents to the SSSLs. Complete analytical results are presented in Appendix H.

Subsurface Soil. Three subsurface soil samples were collected at Building 3691, Parcel 506(7). The subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 6-27. Analytical results were compared to residential human health SSSLs and background concentrations, as presented in Table 6-61.

Ethylbenzene, toluene, and total xylenes were detected in each of the subsurface soil samples collected. Ethylbenzene was detected at concentrations ranging from 0.015 mg/kg to 0.021 mg/kg. Toluene was detected at concentrations ranging from 0.008 mg/kg to 0.013 mg/kg. The highest concentrations of ethylbenzene (0.021 mg/kg) and toluene (0.013 mg/kg) were detected at soil boring location UST-506-GP02. Total xylenes were detected at concentrations ranging from 0.029 mg/kg to 0.039 mg/kg. The highest concentration was detected at soil boring location UST-506-MW01 at 0.039 mg/kg. The ethylbenzene, toluene, and total xylene concentrations were below SSSLs.

Lead was detected in each of the subsurface soil samples collected, ranging in concentration from 6.2 mg/kg to 9.4 mg/kg. The highest concentration was detected in soil boring location UST-506-GP01 at 9.4 mg/kg. The lead concentrations were below the SSSL and the background concentration. PAHs were not detected in any of the subsurface soil samples collected.

6.25.5 Conclusions

IT, under contract with USACE, completed a UST closure assessment investigation at Building 3691, Parcel 506(7) at FTMC, Calhoun County, Alabama. The UST closure assessment was conducted to determine the current environmental condition of the site and whether chemicals exist in concentrations high enough to require further action. The UST closure assessment consisted of the sampling and analysis of subsurface soil samples and a groundwater sample. In addition, one permanent monitoring well was installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

IT collected three subsurface soil samples and one groundwater sample during the UST closure assessment at Building 3691, Parcel 506(7). The analytical results indicate that ethylbenzene, toluene, total xylenes, and lead were detected in the subsurface soil. There were no chemical constituents detected in groundwater. Analytical results were compared to the residential human health SSSLs. The SSSLs were compiled for FTMC for human health as part of the ongoing investigations being performed under the BRAC Environmental Restoration Program at FTMC.

None of the detected constituents exceeded the SSSLs or background concentrations.

6.25.6 Recommendations

Based on the results of the UST closure assessment, the past operation of the UST at Building 3691, Parcel 506(7) does not appear to have adversely impacted the environment. The trace concentrations of petroleum constituents and lead do not pose a risk to human health or the environment in the residential land-use scenario. Therefore, IT recommends the property is suitable for transfer without restrictions under the BRAC Environmental Restoration Program, and “No Further Action” is required at the Building 3691, Parcel 506(7).

7.0 References

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ATTACHMENT 1

LIST OF ABBREVIATIONS AND ACRONYMS

APPENDIX A

**SUBSURFACE SOIL SAMPLE AND GROUNDWATER SAMPLE
DESIGNATIONS,
AND QA/QC SAMPLE QUANTITIES**

APPENDIX B

SAMPLE COLLECTION LOGS AND ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORDS

ANALYSIS REQUEST AND CHAIN-OF-CUSTODY RECORDS

APPENDIX C

BORING LOGS AND WELL LOGS

APPENDIX D

WELL DEVELOPMENT LOGS

APPENDIX E

SURVEY DATA

APPENDIX F

**VARIANCES TO THE SITE-SPECIFIC FIELD SAMPLING PLAN,
UNDERGROUND STORAGE TANK
CLOSURE ASSESSMENTS**

APPENDIX H

SUMMARY OF ANALYTICAL DATA

APPENDIX G

BASEWIDE GROUNDWATER ELEVATION DATA